

INTRODUCTION.

The Smithsonian Institution has attained a world-wide reputation, and its influence and importance are constantly extending. Its publications are found not only in the public libraries of our own land, but also in those of every other civilized country. Its correspondents include some of the most distinguished cultivators of science of the present day, and it is referred to as a center of information by those who are interested in the pursuit of knowledge.

Many persons, however, who visit Washington, are but imperfectly acquainted with the history of Smithson, the great object he had in view, the plans adopted to carry out his intentions, and the results already obtained. It is for the purpose of furnishing more definite information on these points that this work has been compiled, from the annual reports of the Secretary, Professor HENRY, to the Board of Regents, and other authentic sources.

data.

THE SMITHSONIAN INSTITUTION.



The Founder.

JAMES SMITHSON, the founder of the Institution which bears his name and will perpetuate his memory, was a native of London, England. In his will he states that he was the son of Hugh, first Duke of Northumberland, and Elizabeth, heiress of the Hungerfords, of Audley, and niece of Charles the Proud, Duke of Somerset. He was educated at Oxford, where he took an honorary degree in 1786. He went under the name of James Lewis Macie until a few years after he had left the university, when he took that of Smithson, the

family name of the Northumberlands. He does not appear to have had any fixed home in England, but travelled much on the continent, occasionally staying a year or two in Paris, Berlin, Florence, etc. He died at Genoa, in 1828, at an advanced age. He is said by Sir Davies Gilbert, President of the Royal Society, to have rivalled the most expert chemists in minute analysis; and, as an instance of his skill, it is mentioned that, happening to observe a tear gliding down a lady's cheek, he endeavored to catch it on a crystal vessel; that half of the drop escaped, but having preserved the other half, he submitted it to close analysis, and discovered in it several salts. He contributed a number of valuable papers to the Royal Society, and also to the Annals of Philosophy, on chemistry, mineralogy, and geology. His scientific reputation was founded on these branches, though from his writings he appears to have studied and reflected upon almost every department of knowledge. He was of a sensitive, retiring disposition; was never married—appeared ambitious of making a name for himself,

either by his own researches or by founding an institution for the promotion of science. He declared, in writing, that though the best blood of England flowed in his veins, this availed him not, for his name would live in the memory of man when the titles of the Northumberlands and Percies were extinct or forgotten. He was cosmopolitan in his views, and affirmed that the man of science is of no country—the world is his country, and all men his countrymen. He proposed at one time to leave his money to the Royal Society of London, for the promotion of science, but on account of a misunderstanding with the council of the Society he changed his mind, and left it to his nephew, and in case of the death of this relative, to the United States, to found the Institution which now bears his name.

The Bequest.

The original amount received from the bequest was \$515,169; but from a residuary legacy, savings of interest, &c., the fund has been increased to \$650,000 now in the Treasury of the United States and yielding six per cent. interest. The Government of the United States accepted the bequest, or in other words, accepted the office of trustee, and the Hon. Richard Rush, of Pennsylvania, was charged with the duty of prosecuting the claim. He remained in attendance on the English courts until the money was awarded to him. He brought it over in sovereigns, deposited it in the Mint of the United States, where it was recoined into American eagles, thus becoming a part of the currency of the country.

At the time of the passing of the act establishing the Institution, in 1846, the sum of \$242,000 had accrued in interest, and this the Regents were authorized to expend on a building. But, instead of appropriating this sum immediately to this purpose, they put it at interest, and deferred the completion of the building for several years, until over \$100,000 should be accumulated, the income of which might defray the expenses of keeping the building, and the greater portion of the income of the original bequest be devoted to the objects for which it was designed. This policy has been rigidly adhered to, and notwithstanding an expenditure of \$450,000 on the building, the collection of a large library and museum, and the publication of many volumes of original researches, the bequest of Smithson is not only undiminished, but has increased more than a hundred thousand dollars.

The Plan of Organization.

The bequest, in the language of the testator, was “to found at Washington an establishment, under the name of the Smithsonian Institution, for the increase and diffusion of knowledge among men.” According to this, the Government of the United States is merely a trustee. The bequest is *for the benefit of mankind*, and any plan which does not recognize this provision of the will would be illiberal and unjust. The Institution must bear and perpetuate the name of its founder, and hence its operations are kept distinct from those of the General Government, and

all the good which results from the expenditure of the funds is accredited to the name of Smithson.

It will be observed that the object of the bequest is twofold—first, to *increase*, and, second, to *diffuse*, knowledge among men. These two objects are entirely separate and distinct, and to view the case understandingly the one must not be confounded with the other. The first is to enlarge the existing stock of knowledge by the addition of new truths, and the second, to disseminate knowledge thus enlarged among men. This distinction is readily acknowledged by men of science, and in Europe different classes of scientific and other societies are founded upon it. The will makes no restriction in favor of any particular kind of knowledge, and hence all branches are entitled to a share of attention. Smithson was well aware that knowledge should not be viewed as existing in isolated parts, but as a whole, each portion of which throws light on all the others, and that the tendency of all is to improve the human mind, and to give it new sources of power and enjoyment. A prevalent idea, however, in relation to the will is, that the money was intended exclusively for the diffusion of *useful* or immediately practical knowledge among the inhabitants of this country, but it contains nothing from which such an inference can be drawn. All knowledge is useful, and the higher the more important. From the enunciation of a single scientific truth may flow a hundred inventions, and the more abstract the truth the more important the deductions. To effect the greatest good, the organization of the Institution should be such as to produce results which could not be attained by other means, and inasmuch as the bequest is for men in general, all merely local expenditures are inconsistent with the will. These were the views expressed by the Secretary, Professor Henry, and constantly advocated by him. They were not entertained, however, by many, and consequently difficulties have been encountered in carrying them out. A number of literary men thought that a great *library* should be founded at Washington, and all the money expended on it; others considered a *museum* the proper object; and another class thought the income should be devoted to the delivery of *lectures* throughout the country; while still another was of opinion that popular *tracts* should be published and distributed amongst the million. But all these views were advanced without a proper examination of the will, or a due consideration of the smallness of the income. The act of Congress directed the formation of a library, a museum, a gallery of art, lectures, and a building on a liberal scale to accommodate these objects. One clause, however, gave the Regents the power, after the foregoing objects were provided for, to expend the remainder of the income in any way they might think fit for carrying out the design of the testator. The plan they have adopted is to stimulate all persons in this country capable of advancing knowledge by original research to labor in this line; to induce them to send their results to the Institution for examination and publication; and to assist all persons engaged in original investigations, as far as its means will allow; also to institute, at the expense and under the direction of the Institution, particular researches.

The Government.

An act of Congress, dated August 10, 1846, provides "that the President and Vice-President of the United States, the Secretary of State, the Secretary of the Treasury, the Secretary of War, the Secretary of the Navy, the Postmaster General, the Attorney General, the Chief Justice, and the Commissioner of the Patent Office of the United States, and the Mayor of the City of Washington, during the time for which they shall hold their respective offices, and such other persons as they may elect as honorary members, be and they are hereby constituted an 'establishment,' by the name of the 'Smithsonian Institution,' for the increase and diffusion of knowledge among men."

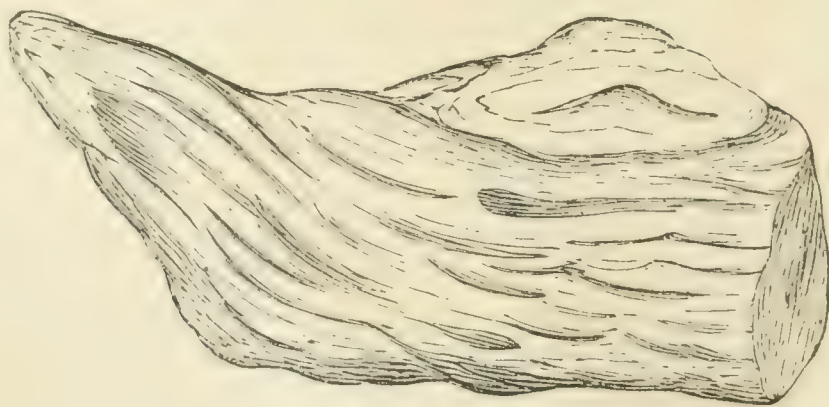
The law also provides for a "Board of Regents," to be composed of the Vice-President of the United States and the Mayor of the City of Washington, during the time for which they shall hold their respective offices, three members of the Senate and three members of the House of Representatives, together with six other persons, other than members of Congress, two of whom shall be members of the National Institute, in the City of Washington, and resident in the said city; and the other four shall be inhabitants of other States, and no two of them from the same State.

The Establishment exercises general supervision over the affairs of the Institution.

The Board of Regents conducts the business of the Institution, and makes annual reports to Congress.

The Secretary of the Institution is elected by the Board. His duty is to take charge of the building and property, discharge the duty of librarian, keeper of the museum, etc., and has power, by consent of the Regents, to employ assistants.

All laws for the protection of public property in Washington apply to the lands, buildings, and other property of the Institution.



METEORITE FROM COAHUILA, MEXICO.

The Structure.

The Smithsonian building stands on a part of a tract of public land denominated "*the Mall*," and the grounds extend from Seventh to Twelfth streets, east and west, and from the canal to B street, north and south, comprising about fifty-two acres. The center of the building is directly opposite Tenth street, and the site is about twenty feet above the average level of Pennsylvania avenue.

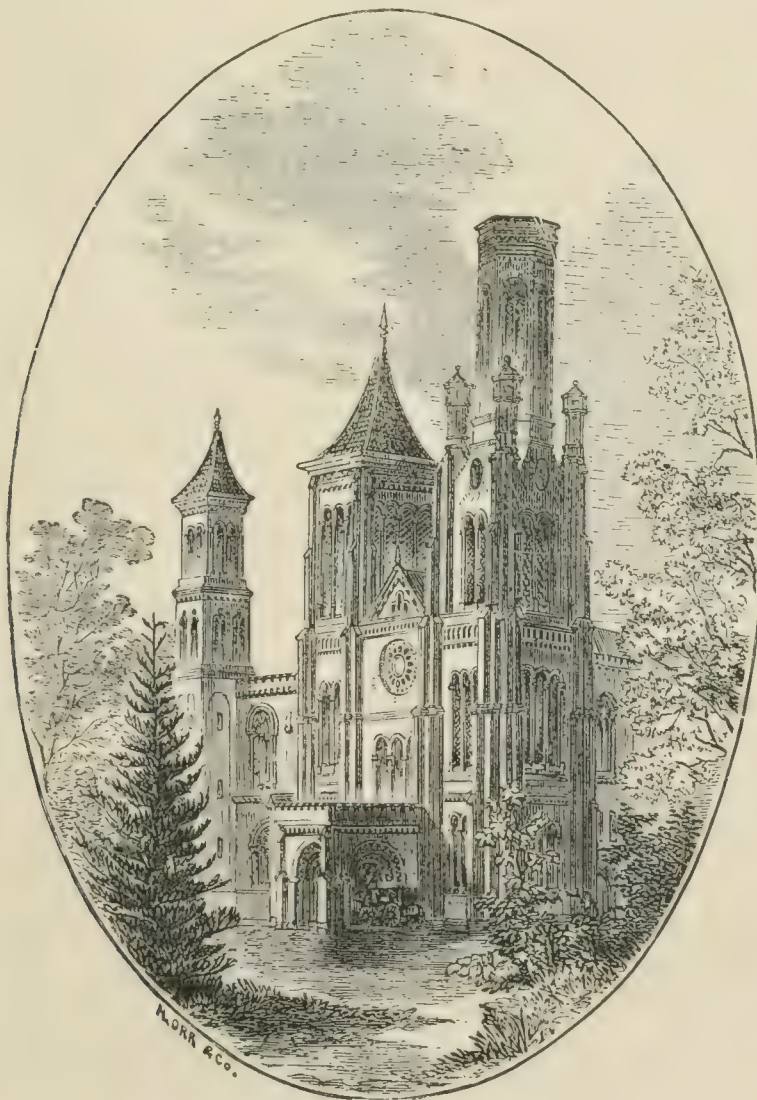
The style of architecture is that of the last half of the twelfth century, the latest variety of the rounded style, as it is found immediately anterior to its merging into the early Gothic, and is known as the Norman, the Lombard, or Romanesque. The semi-circular arch, stilted, is employed throughout—in doors, windows, and other openings.

It is the first edifice in the style of the twelfth century, and of a character not ecclesiastical, ever erected in this country.

The main building has in the center of its north front two towers, of which the higher reaches an elevation of about 150 feet. On the south front is a

massive tower 37 feet square and 91 feet high. On the northeast corner stands a double campanile tower, 17 feet square and 117 feet high; at the southwest corner an octagonal tower, in which is a spiral stair case. There are nine towers in all.

The entire length of the building, from east to west, is 447 feet. Its greatest breadth is 160 feet. The east wing is 82 by 52 feet, and 42½ feet high to the top of its battlement; the west wing, including its projecting apsis, is 84 feet by 40, and 38 feet high, and each of the connecting ranges, including its cloister, is 60 feet by 49. The main building is 205 feet by 57, and, to the top of the corbel course, 58 feet high.



NORTH CENTRAL TOWERS.

The building is erected in a very substantial manner. The foundation walls under the main central towers are 12 feet thick at bottom, gradually diminishing to five feet six inches at the surface of the ground, and are sunk eight feet deep. The thickness of the walls of the main building above the water table is two feet and-a-half in the first story, and two feet in the second, exclusive of buttresses, corbel courses, &c. The walls of the wings are two feet thick; of the central towers three feet and a half thick in the first story, diminishing to two feet in the highest story. The roofs are slated. The face of the building is finished in ashlar, laid in courses from 10 to 15 inches in height, and having an average bed of nine inches.

The material employed is a lilac gray variety of freestone, found in the new red sandstone formation where it crosses the Potomac, near the mouth of Seneca Creek, one of its tributaries, and about twenty-three miles above Washington. When first quarried it is comparatively soft, working freely before the chisel and hammer; but by exposure it gradually indurates, and ultimately acquires toughness and consistency, that not only enables it to resist the changes of the atmosphere, but even the most severe mechanical wear and tear.

The corner-stone of the building was laid with Masonic ceremonies, on the first of May, 1847, in the presence of President Polk, his Cabinet, and an immense concourse of citizens and strangers. The Grand Master of Masons, who performed the ceremony, wore the apron presented by the Grand Lodge of France to Washington, through La Fayette, and used the gavel employed by Washington when he laid the first corner-stone of the Capitol of the United States. An oration was delivered by the Hon. George Mifflin Dallas, the first Chancellor of the Smithsonian Institution, and now United States Minister to Great Britain. In the course of his remarks Mr. Dallas said: "When, at no distant day, I trust, it shall be seen that within the walls of this building the truths of nature are forced by persevering researches from their hidden recesses, mingled with the stock already hoarded by genius and industry, and thence profusely scattered, by gratuitous lectures or publications, for the benefit of all—when it shall be seen that here universal science finds food, implements, and a tribune—art her spring to invention, her studio, and her models; and both shall have throngs of disciples from the ranks of our people, emulous for enlightenment, or eager to assist—then the condition of our legacy will have been performed, and the wide philanthropy of Smithson have achieved its aim."

The design, by James Renwick, Jr., of New York, consists of a main center building, two stories high, and two wings, connected by intervening ranges; each of these latter having, on the north or principal front, a cloister, with open stone screen.

The first story of the main building consists of one large room, 200 feet by 50, and 25 feet high, the ceiling of which is supported by two rows of columns extending the whole length; at the middle of the space corresponding to the principal entrances are two wing walls, by which, with the addition of screens, the whole space may be divided into two large rooms, with a hall extending across.

The Library.

Although the act of Congress directed that provision should be made for the accommodation of a library, on a liberal scale, it was soon seen, after the organization of the Institution, that it would be impossible, from the income which could be devoted to it, to establish a first-class general library. Even had this been practicable, it would still have seemed superfluous to do so in the very vicinity of the miscellaneous library of Congress, which is every year increasing in extent under the liberal appropriations which are annually made for the purchase of books. It was therefore deemed preferable, and more consonant with the purposes of the Institution, to form a special library, which might constitute, as it were, a supplement to the library of Congress, and consist, for the most part, of complete sets of the proceedings and transactions of all the learned societies in the world, and of other serials essential for reference by students specially engaged in original scientific research. The efforts of the Institution to carry out this plan, which has since been sanctioned by Congress, have been eminently successful. Principally through exchanges, and occasionally by purchase, a more complete collection of the works above mentioned has been procured than is to be found in any library of the United States, or is easily met with even in Europe. The Institution has been assisted in making this collection by the liberality of many of the older libraries of the eastern continent, which, on application, have furnished from their duplicates volumes and even whole sets to complete series of works long since out of print, and which, in some cases, could not have been obtained through any other means. The Library is also quite rich in monographic or special treatises in the physical and natural sciences, lacking as yet, it is true, some of the more expensive volumes, but still affording the means of prosecuting almost any scientific investigation.

One specialty of the Library consists of the large number of maps and charts, obtained by exchange from geographical and hydrographical establishments, &c. This collection is as complete as any in the country.

No effort is spared to render the Library of the Institution conducive to the advance of science. Several editions of the catalogue of serial works have been published.

In 1867 the care of the library was transferred to the library of Congress, subject to be recalled at any time on certain conditions. The books are now catalogued and bound at the expense of the Government, while the officers and collaborators of the Institution have the same use of them as formerly, with greatly increased facilities from access to the larger collection of books in the National Library. The Institution still sends its publications, in exchange, to other establishments at home and abroad, and desires to increase its library by transactions of societies, and serial and scientific works.



THE LIBRARY.

In the large hall at the south entrance to the building are a number of articles of special interest. The most prominent of these is the ancient **SARCOPHAGUS**, which was brought to this country on the frigate *Constitution*, by Commodore Elliott, from Beirut, in Syria, in 1839. This Sarcophagus was believed to be the repository of the remains of a Roman Emperor, and was intended for those of President **ANDREW JACKSON**. The General, however, refused to accept the gift, saying "I cannot consent that my mortal body shall be laid in a repository prepared for an Emperor or a King—my republican feelings and principles forbid it—the simplicity of our system of Government forbids it."

A *plank* from the redwood tree, and a piece of *bark* from the famous giant tree of California, will attract attention, as well as an immense mass of *copper* from Lake Superior.

Among the most interesting objects in this part of the collection are several **IDOLS** from Central America, presented by Hon. E. G. Squier, late United States Minis-



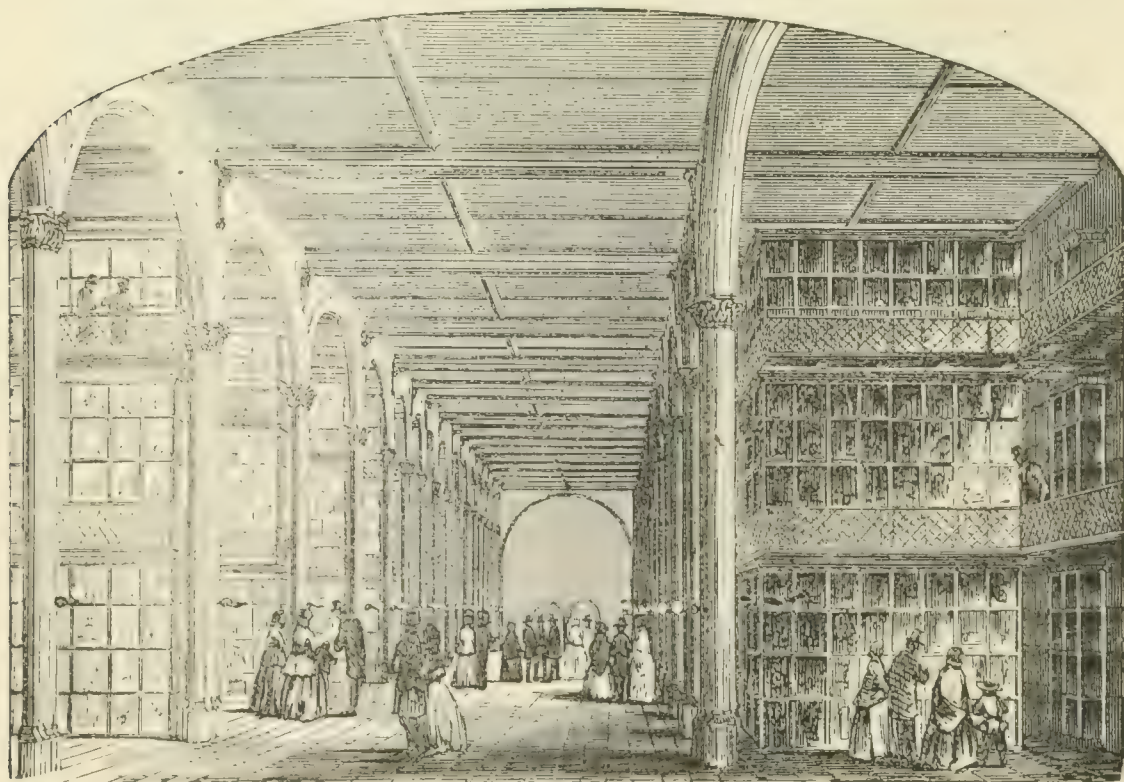
ter to Nicaragua. The largest statue, carved in black basalt, was obtained from the Island of Momotombita, in Lake Managua, where there was a temple or sacred place. The figure with the sphinx-like head-dress is also from the same locality. One or two of the other statues, by the Indians of the Pueblo of Subtiava, near Leon, having been buried a great number of years, and the locality carefully concealed, they are somewhat mutilated. A small group of these monuments exists in the depths of the forest midway between Leon and the Pacific, which is still secretly visited by the Indians for the performance of dances and other rites pertaining to their primitive religion. The small figure resembling some animal *couchant* was, until very recently, preserved on a remarkable rock on the side of the volcano of Omatepec, and regarded with high veneration by the Indians. It was only after many years of search that the priests were able to find and remove it. The granite vase, distinguished by the ornaments called *grecques* by Humboldt, (and which characterize the ruins at Mitla, in Mexico,) was dug up near the city of Nicaragua. The spot had been a cemetery of the ancient inhabitants.

Another relic of the same material, and with a like style of ornament, accompanies the vase, and was found in the same neighborhood. It seems to have been designed as a pedestal for a small statue. There are also several vases, in which the bones and ashes of the dead were packed after the decomposition of the flesh or after burning.

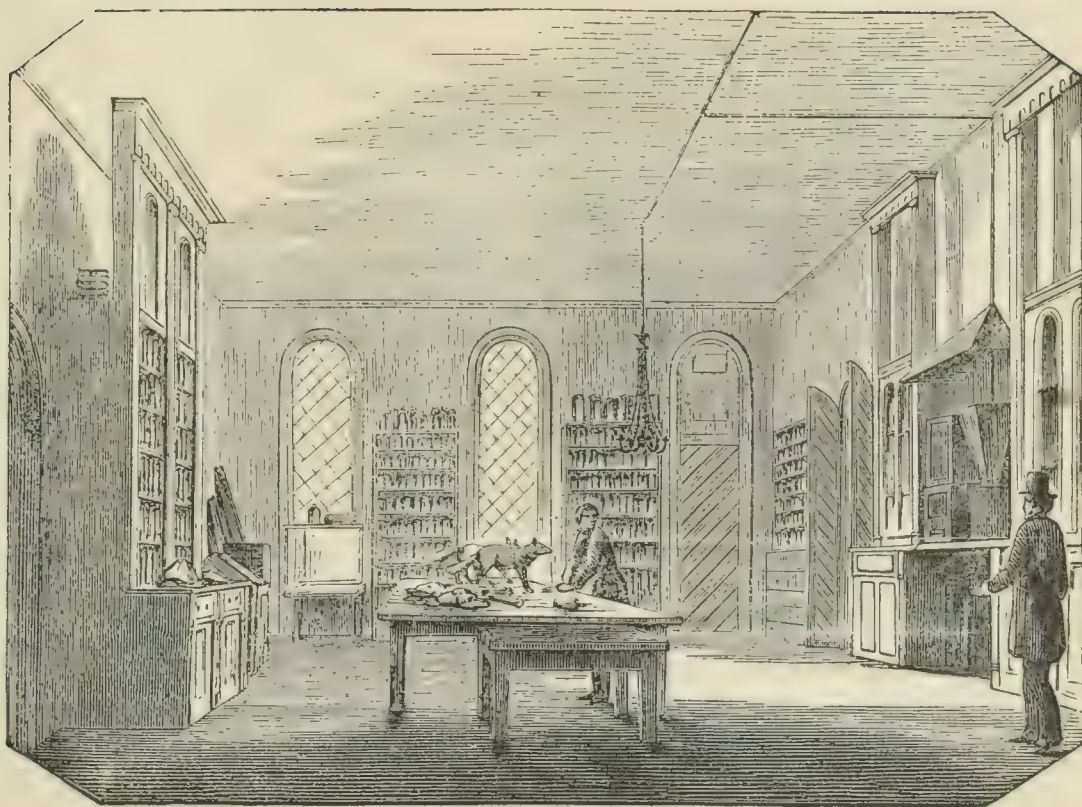
The largest and most elaborate monuments in Nicaragua exist in the little Island of Pensacola, near the base of the extinct volcano of Momobacho. They weigh a number of tons each, and are distinguished as being wrought from blocks of sandstone—a material which is not found on the island. Two of the statues of the Smithsonian collection are from the Island of Zapatero, in Lake Nicaragua, where once existed one of the most imposing aboriginal temples of the country. Here, among the ruins of the *teocalli*, or high-places of the former inhabitants, were found entire statues, besides the fragments of many others, several broken sacrificial stones, etc.

The Museum.

The Smithsonian Institution is now in possession of the best collection of the larger North American and European mammalia, both skins and skeletons, to be found in the United States. In birds it is only second to the collection of the Philadelphia Academy of Natural Sciences—the latter being without doubt the most extensive and perfect now extant. Of fish the Smithsonian has a greater number than is to be found in any cabinet, except that of Professor Agassiz.



THE MUSEUM.



LABORATORY OF NATURAL HISTORY

It should be understood that the Smithsonian Institution does not enter upon grounds already occupied, and therefore it is not an object to collect specimens promiscuously, or those usually found in other museums. Still the collection of this Institution is now attractive to the general visitor and curiosity seeker; and the student of natural history will here find much that will be sought in vain elsewhere. Duplicate specimens are often exchanged for those in other collections, and all the objects are open for the study and examination of those engaged in this line of research. Applications for such facilities are numerous, and have always been granted. The preparation of most of the important papers on natural history published within a few years in this country has been aided in this way by the Institution.

The act of Congress establishing the Institution provides as follows :—

SEC. 6. That, in proportion as suitable arrangements can be made for their reception, all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens belonging, or hereafter to belong, to the United States, which may be in the city of Washington, in whosoever custody the same may be, shall be delivered to such persons as may be authorized by the Board of Regents to receive them, and shall be arranged in such order, and so classed, as best facilitate the examination and study of them, in the building so as aforesaid to be erected for the Institution; and the Regents of said Institution shall afterwards, as new specimens in natural history, geology, or minerology, may be obtained for the museum of the Institution, by exchange of duplicate specimens belonging to the Institution, (which they are hereby authorized to make,) or by any donation, which they may receive, or otherwise, cause such new specimens to be also appropriately classed and arranged.

Under these provisions, the Institution has received and taken charge of such government collections in mineralogy, geology, and natural history as have been made since its organization. The amount of these has been very great, as all the United States Geological, Boundary and Railroad Surveys, with the various topographical, military, and naval explorations, have been, to a greater or less extent, ordered to make such collections as would illustrate the physical and natural history features of the regions traversed.

Of the collections made by the government expeditions, those of fifty are now deposited with the Smithsonian Institution, embracing more than five-sixths of the whole amount of materials collected. The principal expeditions thus furnishing collections are the United States Geological Surveys of Doctors Owen, Jackson, and Evans, and of Messrs. Foster and Whitney; the United States and Mexican Boundary Survey; the Pacific Railroad Survey; the Exploration of the Yellow Stone, by Lieutenant Warren; the Survey of Lieutenant Bryan; the United States Naval Astronomical Expedition; the North Pacific Behring Straits Expedition; the Japan Expedition, and the Paraguay Expedition.

The Institution has also received, from other sources, collections of greater or less extent, from various portions of North America, tending to complete the government series.

The collections thus made, taken as a whole, constitute the largest and best series of the minerals, fossils, rocks, animals, and plants of the entire continent of North America, in the world. Many tons of geological and mineralogical specimens, illustrating the surveys throughout the West, are embraced therein. There is also a very large collection of minerals of the mining regions of Northern Mexico, and of New Mexico, made by a practical Mexican geologist, during a period of twenty-five years, and furnishing indications of many rich mining localities within our own borders, yet unknown to the American people.

It includes, also, with scarcely an exception, all the vertebrate animals of North America, among them many specimens each of the Grizzly, Cinnamon, and Black Bears; the Panther, Jaguar, Ocelot, and several species of Lynx or Wildcat; the Elk, the Mexican, Virginian, White-tailed, Black-tailed, and Mule Deer; the Antelope, Rocky Mountain Goat and Sheep; several species of Wolves and Foxes, the Badger, Beaver, Porcupine, Prairie Dog, Gopher, and also about seven hundred species of American Birds, four hundred of Reptiles, and eight hundred of Fishes, embracing Salmon, Trout, Pike, Pickerel, White Fish, Muskalonge, Bass, Redfish, &c.

The greater part of the Mammalia have been arranged in walnut drawers, made proof against dust and insects. The birds have been similarly treated, while the reptiles and fish have been classified, as, to some extent, have also been the shells, minerals, fossils, and plants.

The collections are increasing so rapidly that it will soon be impossible, from the small part of the Smithsonian income which can be devoted to this purpose, to properly sustain a large museum, and a National Museum should be established by the Government on a scale commensurate with the resources, productions, and character of the country.

The fund of a foreigner intended for the "increase and diffusion of knowledge among men" should not be absorbed in local objects and in doing that which the Government should in honor and good faith do itself.

The Institution, if relieved of the charge of the show museum, would devote its energies in the way of advancing natural history by instituting original explorations in all parts of the world, making collections and distributing duplicates to all other museums.

Meteorites.

In the Museum hall may be seen a meteorite, from Northern Mexico, which weighs 250 pounds.

It was brought to this country by Lieutenant Couch, of the United States Army, he having obtained it at Saltillo. It was said to have come from the Sancha estate, some fifty or sixty miles from Santa Rosa, in the north of Coahuila, various accounts were given of the precise locality, but none seemed very satisfactory. When first seen by Lieutenant Couch, it was used as an anvil, and had been originally intended for the Society of Geography and Statistics in the city of Mexico. It is said, that where this mass was found there are many others of enormous size; but such stories, however, are to be received with many allowances. Mr. Weidner, of the mines of Freiberg, states, that near the southwestern edge of the Balson de Mapimi, on the route to the mines of Parral, there is a meteorite near the road of not less than a ton weight. Lieutenant Couch also states, that the intelligent, but almost unknown, Dr. Berlandier, writes in his journal of the Commission of Limits, that at the hacienda of Venagas, there was (1827) a piece of iron that would make a cylinder one yard in length, with a diameter of ten inches. It was said to have been brought from the mountains near the hacienda. It presented no crystalline structure, and was quite ductile.

Another Meteorite to be seen here is still more curious and interesting, from its remarkable size and appearance. It is in the shape of a ring much heavier on one side. Its greatest exterior diameter is 49 inches; the least 38 inches; width of central opening 23 inches; width of thickest part of the ring $17\frac{1}{2}$ inches. It weighs 1400 lbs. Its composition is principally of iron. It was discovered in Sonora by Jesuit missionaries, brought to Tucson in Arizona, and was sent, through the influence of Dr. Irwin, U. S. A., by Mr. Augustine Ainsa, to Hermosillo. In May, 1863, Mr. Jesus Ainsa brought it to San Francisco, and shipped it to the Smithsonian Institution.

What has been done.

The following is a sketch of the labors of the Institution, and illustrates the capability of the plan of operations for producing important results in the way of *increasing and diffusing knowledge among men*:—

Publications.—Three classes are issued.

1. A quarto series, entitled “SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE,” issued in volumes, each containing one or more separate articles. This includes memoirs, embracing the records of extended original investigations and researches, resulting in what are believed to be new truths, and constituting positive additions to the sum of human knowledge.

2. An octavo series, entitled “SMITHSONIAN MISCELLANEOUS COLLECTIONS,” consisting of reports on the present state of our knowledge of particular branches of science; instructions for collecting and digesting facts and materials for research; lists and synopses of species of the organic and inorganic world; museum catalogues; reports of explorations; aids to bibliographical investigations, etc., generally prepared at the express request of the Institution, and at its expense.

3. Another octavo series, consisting of the Annual Reports of the Institution to Congress, called “SMITHSONIAN REPORTS.” These include the official reports of the Secretary to the Board of Regents of the operations and condition of the Institution; the reports of Committees of the Board; abstracts of lectures delivered before the Institution; extracts from correspondence; original or translated articles relating to the history and progress of science, etc.

The following rules have been observed in the distribution of the first and second series:

1. They are presented to all learned societies of the first class which publish transactions, and give copies of these, in exchange to the Institution.

2. To all foreign libraries of the first class, provided they give in exchange their catalogues and other publications, or an equivalent, from their duplicate volumes.

3. To all the colleges in actual operation in this country, provided they furnish, in return, meteorological observations, catalogues of their libraries and of their students, and all other publications issued by them relative to their organization and history.

4. To all States and Territories, provided they give, in return, copies of all documents published under their authority.

5. To all incorporated public libraries in this country, not included in any of the foregoing classes, now containing 10,000 volumes; and to smaller libraries, where a whole State or large district would be otherwise unsupplied.

Institutions devoted exclusively to the promotion of particular branches of knowledge, receive such articles published by the Institution as relate to their objects. Portions of the series are also given to institutions of lesser grade not entitled, under the above rules, to the full series, and also to the meteorological correspondents of the Institution.

The Reports are of a more popular character, and are presented

1. To all the meteorological observers and other collaborators of the Institution.
2. To donors to its Library or Museum.
3. To colleges and other educational establishments.
4. To public libraries and literary and scientific societies.
5. To teachers or individuals who are engaged in special studies, and who make direct application for them.

Besides the works which have been published entirely at the expense of the Institution, aid has been furnished by subscription for copies to be distributed to foreign libraries of a number of works which fall within the class adopted by the programme. The principal works of this kind for which subscriptions have been made are as follows: Agassiz's Contributions to Natural History, Gould's Astronomical Journal, Shea's American Linguistics, Runkle's Mathematical Monthly, Deane's Fossil Footprints, Tuomey & Holmes' Fossils of South Carolina, Peirce's Analytic Mechanics.

Meteorology —The investigation of all questions relative to meteorology has been an object to which the Institution has devoted special attention, and one of its first efforts was to organize a voluntary system of observation, which should extend as widely as possible over the whole of the North American continent. It induced a skilful artisan, under its direction, to commence the manufacture of carefully compared and accurately graduated instruments, now generally known as the Smithsonian standards. It prepared and furnished a series of instructions for the use of the instruments and the observations of meteorological phenomena; also three series of blank forms as registers.

It next organized a body of intelligent observers, and in a comparatively short time brought the system into practical operation; each year the number of observers increased, and where one ceased his connection with the enterprise, several came forward to supply his place. By an arrangement with the Surgeon General of the army, the observations made at the United States military posts in different parts of the country, and also the system which had previously been established by the State of New York, were remodelled so as to harmonize with that of the Institution. Gentlemen interested in science residing in the British provinces, and at nearly all the posts of the Hudson's Bay Company, also in Mexico, Central America, the West Indies, and some places in South America, &c., joined in this enterprise. All these contribute their services without compensation. Their only reward is the satisfaction of co-operating with each other and the Institution in the effort to supply data and materials for investigation. Any returns, indeed, which the Institution has in its power to make are gladly rendered in a hearty acknowledgment of assistance, and in copies of all the Smithsonian publications likely to be of interest.

The publications of the Institution contain many memoirs which have tended to advance the science of meteorology. Among these may be mentioned the meteorological and physical tables prepared at the expense of the Institution by Professor Guyot, and filling a large octavo volume of the Miscellaneous Collections.

No work extant answers the same purpose with the one referred to, which has hence become a general standard of reference, the constant demand for it as well in Europe as America having required the printing of several successive editions.

The results of the reductions for five years previous to 1860 have been published in two volumes of nearly 2,000 quarto pages, containing a mass of materials of great value in determining the average temperature, fall of rain, barometrical pressure, moisture, direction of the wind, and time of various periodical phenomena relative to plants, animals, &c.

In addition to these large and important volumes, other works have been published by the Institution which have had a marked influence on the progress of meteorology. Among these may be mentioned the works of Professor Coffin, on the winds of the Northern Hemisphere; of Mr. Chappellsmith, on a tornado in Illinois; of Professor Loomis, on a great storm which pervaded both America and Europe; the reduced observations for twenty-eight years of Professor Caswell, at Providence, Rhode Island; of Dr. Smith, for twenty years in Arkansas; of Dr. Kane and Captain McClintock, in the Arctic Seas; on the heat and light of the sun at different points, by Mr. Meech; on the secular period of the aurora, by Professor Olmsted; the occurrence of auroras in the Arctic regions, by Mr. P. Force, &c.

Besides these, a series of meteorological essays embodying many of the results obtained from the investigations at the Institution has been prepared by the Secretary, and been published in the Agricultural Reports of the Patent Office.

Astronomy.—The Institution has advanced the science of astronomy both by its publications and the assistance rendered to observers. To facilitate astronomical observations it prepared and published for six years an annual list of occultations of the principal stars by the moon, and printed and distributed a series of tables for determining the perturbations of the planetary motions, the object of which determination is to facilitate the calculation of the places of the heavenly bodies. These tables have accomplished the desired end, saving to the practical astronomer an immense amount of tedious and monotonous labor.

The name of the Institution has been favorably connected with the history of the interesting discovery of the planet Neptune. From a few of the first observations which had been made on this planet, Mr. Sears C. Walker calculated its approximate orbit, and by this means tracing its path through its whole revolution of 166 years, he was enabled to carry it backward until it fell among a cluster of stars, accurately mapped by Lalande, towards the close of the last century. After minute inspection he was led to conclude that one of the stars which had been observed by Lalande in 1795, was the planet Neptune. He was thus supplied with the amount of its motion for upwards of fifty years, from which he deduced a much more perfect orbit, and was enabled to construct an ephemeris giving the place of the planet for several years in succession. These investigations, so interesting to astronomy and honorable to this country, were prosecuted and published at the expense of the Smithsonian Institution.

To render more generally accessible to practical astronomers in this country the theory of the motion of the heavenly bodies by the celebrated Gauss, the Institution shared the expense of publishing a translation of this treatise from the Latin, by Admiral Davis. It furnishes a complete system of formulas for computing the movements of a body in any of the curves belonging to the class of conic sections, and a general method of determining the orbit of a planet or a comet from three observations, as seen from the earth.

For a number of years aid was afforded to the publication of Gould's American Astronomical Journal, which rendered good service to the science by making promptly known to foreign observers the results of the labors of their contemporaries in America. It has also reduced and published at its own expense the astronomical observations made by Dr. Kane in the Arctic regions, and has also published those made in the same regions by Dr. Hayes.

Congress having authorized, in 1849, an astronomical expedition under Lieutenant Gilliss to the Southern Hemisphere, for the purpose of determining the parallax of the planets, and consequently their distance from the sun, by observations on Venus and Mars, accidentally failed to make the appropriation for instruments. This omission was supplied by the Institution, which was subsequently indemnified for the expense by the Chilean government.

In the observation of all the large solar eclipses which have happened since the date of its organization, the Institution has actively and efficiently co-operated by publishing projections of the phases and times of their occurrence in different parts of America.

Under its auspices, and partly at its expense, an expedition was inaugurated to observe the great eclipse of 1858 in Peru, from which data of value for the improvement of solar and lunar tables were determined, besides facts of interest in regard to the physical constitution of the sun.

Assistance was also rendered to the expeditions under the direction of the Coast Survey, to observe the eclipse of July 18, 1860, one of which was sent to Labrador, under the charge of Professor S. Alexander, of New Jersey, and the other to Washington Territory, under that of Lieutenant Gilliss.

To these may be added an account of an instrument invented by Rev. T. Hill, President of Harvard College, for the projection of eclipses.

Physics and Chemistry.—The Institution has fostered these sciences in many different ways; among others, by importing models of the most approved articles of apparatus, and making them known to scientific men through lectures and otherwise.

It has instituted an extensive series of experiments on building materials, particularly in reference to those employed by the government in the construction of the Capitol and other public edifices; also a like series on acoustics, as applied to public halls, and the principles deduced from these practically applied in the construction of a model lecture room. It has made a very extended series of experiments on different substances employed for light-house illumination, from which

has resulted the substitution of lard oil for sperm oil and the consequent annual saving of a large amount of money to the government.

In compliance with requests made by different departments of the government, and of Congress, particularly since the war, it has conducted various series of investigations, principally in relation to questions involving mechanical, chemical, and physical principles, and has made reports on subjects of this kind amounting, in the aggregate, to several hundred.

To facilitate researches, a laboratory has been established and kept constantly in working condition, the privilege of using it having been given to various competent persons for experimenting in different branches of physical science.

The most important publications under this head are the researches relative to electric currents, by Professor Secchi; on the explosibility of nitre, by Dr. Hare; on the ammonia-cobalt bases, by Drs. Gibbs and Genth; and on astronomical photography, by Dr. Henry Draper.

A valuable report on recent improvements in the chemical arts, by Booth & Morfit, was published in 1852, and there have been given in the Annual Reports of the Institution a series of translations and articles presenting a view of the progress of physics and chemistry from year to year, since 1853, among which we may particularly notice the translation of Muller on recent contributions to electricity, and the reprint of Powell on radiant heat.

Terrestrial Magnetism.—The subject of terrestrial magnetism has been prosecuted simultaneously with that of meteorology, and an observatory was erected in the Smithsonian grounds, fitted up with the most approved instruments, and conducted under the joint auspices of the Institution and of the Coast Survey. After remaining in operation for several years, the instruments were transferred to Key West, as a remote station where observations were still more desirable. Instruments were also furnished an expedition to Mexico, and used with much success by Mr. Sonntag, whose results were published in the Smithsonian Contributions to Knowledge. Apparatus was also furnished to Dr. Kane, Dr. Hayes, and other explorers, by means of which valuable results were obtained.

Of the more important publications of the Institution, which have tended to advance this science, may be mentioned the articles, by Dr. Loeke, on the dip and intensity; the elaborate discussion, by Professor Bache, of the magnetic observations made at Girard College from 1841 to 1845; the report on magnetical observations in the Arctic Seas, by Dr. Kane, reduced at the expense of the Institution, by Mr. C. Schott; and those made in Pennsylvania and adjacent States, by Professor Bache, and in Mexico, by Mr. Sonntag.

Explorations.—In the deficiency of means for more extended operations, the efforts of the Institution in the line of explorations and collection are confined, as strictly as possible, to America. Arctic America, all the unknown portions of the United States, Mexico, Central and South America, and the West Indies have been laid under contribution for facts and materials by which to advance science.

An eminently useful influence has been exerted by the Institution through the aid it has afforded in the organization of the different government explorations by land and by sea. Whether by official representations to the heads of departments, or personal influence with officers and employés, it has secured the engagement of individuals competent to collect facts and specimens; it has instructed persons thus engaged, and others, in the details of observation; it has superintended the preparation, and, in some cases, borne the expense of the necessary outfits; has furnished fresh supplies from time to time to the collectors while in the field; received the collections made, and preserved them for future study, or at once consigned them to the hands of competent persons, both at home and abroad, for investigation; directing the execution of the necessary drawings and engravings for the reports, and finally superintending the printing and even the distribution of any available copies of the completed works to institutions of science. Prior to the establishment of the Institution but little had been done by our government in the way of scientific explorations, with the exception of that under Captain Wilkes. But since then nearly every United States expedition, whether a survey for a Pacific railroad route, a boundary line between the United States and regions north or south of it, or within its borders, a wagon-road across the Rocky Mountains, or an ordinary topographical exploration, has been influenced and aided more or less, as above stated.

Besides these, similar explorations have been carried on without any reference to the government, and either entirely or in a great measure at the expense of the Institution, and always at its suggestion, or under its direction. Prominent among these may be mentioned the three years' researches in the Arctic regions, by Mr. Kennicott, with the co-operation of gentlemen of the Hudson's Bay Company; of Mr. Drexler, in the region of Hudson's Bay, and also in the Rocky Mountains; of Mr. Coues, in Labrador; of Lieutenant Feilner, in Nebraska and Northern California; of Mr. John Xantus, at Fort Tejon, Cape St. Lucas, and in Western Mexico; of Lieutenant Trowbridge, on the coast of California; of Drs. Cooper and Suckley, in Western America generally; of Drs. Coues and Beers, in Kansas, New Mexico, and Arizona; of Dr. Irwin, in Arizona; of Dr. Hitz, about Laramie Peak; of Lieutenant Couch, in Texas and Mexico; of G. Wurdeman, Lieutenant Wright, Captain Woodbury, and others, in Florida, and the Gulf of Mexico; of Dr. Sartorius, Professor Sumichrast, Dr. Berendt, in Mexico; Dr. Von Frantz, J. Carniol, in Costa Rica; of Mr. March, in Jamaica; of Mr. Wright, Dr. Gundlach, Professor Poey, in Cuba; Judge Carter, in Bolivia, besides many others.

In addition to the collections which have been received from explorations organized under the direction of the Institution, large numbers of duplicate specimens have been presented by the meteorological observers and other Smithsonian collaborators, the whole forming a body of material for the illustration and study of the American continent unequalled by any collection previously made. The results of the explorations, however, as might be inferred, have not been confined to specimens alone, but have furnished information relative to the topography, geology, physical geography, ethnology, and the living fauna of the country and regions visited.

The results have been published by government, the Institution, or other parties. The extent and importance of these publications may be seen in the volumes of the reports of the Pacific Railroad and Mexican boundary surveys; of the United States astronomical expedition to Chili, under the late lamented Captain Gilliss; of Captain Stansbury's exploration of Utah; of Lieutenant Michler's of the Isthmus of Darien, &c. &c.; in the volumes of the Smithsonian publications, and in the transactions of nearly all the scientific institutions in the United States.

In order to facilitate the operations of collectors, a series of directions and circulars have been prepared and widely distributed, for collecting, preserving, and transporting specimens of natural history, and also special instructions as to the collecting of nests, eggs, shells, insects, &c.

Description and Distribution of Collections and Specimens.—The object of making these collections, in conformity with the policy of the Institution, was not merely to supply a large museum in Washington with permanent specimens or duplicates for exchange, but to furnish the naturalists of the world with the materials for advancing the science of the natural history of North America, and of facilitating the study of its various branches by supplying museums, both in the United States and in Europe, with sets of type specimens.

In pursuance of this object, full sets of the specimens collected have been submitted to a large number of naturalists, both in this country and abroad, for critical study and description, and it is not too much to say that scarcely a monographic investigation has been conducted for many years past in any branch of American zoology which has not derived part or the whole of its material from the Smithsonian collections. Duplicates of the specimens, when described, have been made up into series for distribution, always accurately labelled, and are usually types of some published investigation. The average of such distribution has, for the last ten years, been at least ten thousand specimens annually, and the whole number distributed over a quarter of a million. In this way all the older museums in this country and Canada have been largely increased, and the foundation for several new establishments of a similar kind has been furnished. To all colleges and academies making special application, labelled specimens have also been presented.

This distribution of specimens is very different from the ordinary exchanges conducted between institutions or individuals, which usually involve the return of an equivalent. The question with the Smithsonian Institution is, not what can be had in return, but where a particular specimen or series of specimens can be placed so as best to advance the cause of science, by being most accessible to the largest number of students engaged in original investigations.

Palæontology, Geology, Physical Geography, &c.—Appropriations have been made for investigations of the surface formation of the Connecticut valley, by Professor E. Hitchcock, and for the collection of materials for the illustration of the geology and palæontology of particular regions. Appropriation has also been made to Professor Guyot for a barometrical survey of the different parts of the

Alleghany Mountains, and to other persons for collecting observations on heights, as determined in different parts of the country by the various canal and railway surveys.

The publications on these subjects, besides the papers of Professor Hitchcock on surface geology, are as follows: A Memoir on *Mosasaurus*, by Dr. R. W. Gibbs. On the Extinct Species of the Fossil Ox and Sloth of North America, and on the Ancient Fauna of Nebraska, by Dr. Leidy. On the Physical Geography of the Mississippi Valley, by Charles Ellet. On the Law of Deposit of Flood Tide, by Admiral Davis. On the Fluctuations of the Level of the great American Lakes, by C. Whittlesey. On the Palæontology of the Upper Missouri, and Check List of Miocene Cretaceous and Jurassic Invertebrata, by F. B. Meek. A Memoir, by Dr. Leidy, on the Extinct Reptiles of the Cretaceous period.

The Institution has published a check list of *minerals*, with their symbols, prepared by Mr. Egleston, with special reference to facilitating the labelling of the Smithsonian minerals and the exchange of specimens, and it may be mentioned that the Institution has made an extensive distribution of specimens of building stone employed by the government.

Botany.—This branch of general natural history has been advanced by the Institution, not only by means of the publication of the papers of original memoirs, but also by explorations and collections made at the expense of the Smithsonian Fund. The most important work which has been published is a large quarto volume, illustrated by expensive colored plates, of the sea plants of the entire American coast. The work was written for the Institution by Dr. Harvey, of the University of Dublin, and has been the means of rendering this family of the vegetable kingdom more generally known. The Institution has also published several papers on the plants of New Mexico and California, by Dr. Gray, of Cambridge, and Dr. Torrey, of New York.

Duplicates of the specimens described have been presented to institutions at home and abroad. Considerable labor has also been expended in the preparation of an original report on the forest trees of America, by Dr. Gray.

General Zoology.—A large part of the collections made by the Institution belong to the general class of zoology, intended to advance the study of animal life upon the continent of America.

The ornithology of America has always been a specialty of the Smithsonian Institution, more efforts having been made to perfect its collection in this department than any other. The Institution has published the first part of a work by Dr. T. M. Brewer, suitably illustrated, on the distribution and habits of North American birds during the breeding season, with descriptions and figures of their eggs, the materials being derived entirely from the collections of the Institution, and mostly made at its special request. This is the first separate work on North American zoology ever prepared. A catalogue of North American birds, prepared by Professor S. F. Baird, has been extensively used at home and abroad in labelling collections.

Professor Baird has prepared a revision, or posting up, of our knowledge of North American ornithology to the present date, with the addition of the species of Central and South America and the West Indies. The materials being derived almost entirely from the specimens collected by the Institution, have been increased since the publication of the extensive work on the same subject, by Professor Baird, in the Pacific Railroad report, from 12,000 to 35,000.

The collections which have been made by the Institution for the illustration of mammalia have been very extensive, amounting to 10,000 specimens, and have not only included many duplicates of every species previously known, but a very large number entirely new to science. A catalogue of North American mammals, chiefly those collected by the Institution, prepared by Professor Baird, has been published and distributed to those interested in the study; also a monograph of North American bats, prepared by Dr. H. Allen. Materials are now in course of accumulation to complete the account of the classes of mammals of North America, which have not been included in the publications of the Institution and Pacific Railroad Reports.

As with all American vertebrata, the collections of reptiles and fishes have been very extensive, and numerous monographs or articles have been published relative to them in the Pacific Railroad Reports, and the proceedings of different natural history societies, the Institution having published a synopsis of the serpents of North America, and a monograph of the cottoids.

The Institution has materially aided the study of the entomology of this country, not only by the collections in that branch, but by preparing and publishing a series of works for the purpose of exhibiting the state of knowledge on the subject, and facilitating its further advancement. It has published and distributed the following under this head:—

Instructions for collecting and preserving insects, and catalogues, synopses, or monographs of the Diptera, Coleoptera, Lepidoptera, and Neuroptera, prepared by the most competent authorities in Europe and America.

It has also in course of preparation, works relative to the Hymenoptera, Homoptera, Hemiptera, Orthoptera, &c.

Conchology.—A large collection of specimens of shells was received from the United States exploring expedition, which has been much increased by subsequent additions. All the shells of the west coast of the United States, and those generally collected by the exploring expedition, were put into the hands of Mr. P. P. Carpenter, of England, the new ones described for publication, and the duplicates of the whole arranged for distribution to museums, colleges, and other establishments. The publications on this subject are, Lists of North American Shells, Circulars Relative to Collecting, an Elementary Introduction to the Study of Conchology, and an extensive work, in two octavo volumes, on the Bibliography of North American Conchology, by W. G. Binney, and a Monograph of the Corbiculidæ, by Temple Prime. Besides these, a number of articles are in the press or in course of preparation.

Microscopy.—Encouragement has been given to this branch of science, by importing, as samples, simple forms of working microscopes, and also by stimulating our native artists to greater exertion in the construction of this instrument, by ordering the best that could be produced. Samples of microscopic organisms have been collected and distributed to observers, and examinations and reports have been made on a large number of this class of objects sent to the Institution. The publications in regard to this subject are a number of papers by Professor Bailey, of West Point, and a very interesting Memoir, by Dr. Leidy, of Philadelphia, on a Fauna and Flora within Living Animals.

Physiology.—No experiments on this subject have been made under the immediate direction of the Institution, although it has furnished the materials for investigation by other parties. The publications in regard to it are Chemical and Physical Researches concerning North American Vertebrata, by Dr. J. Jones; Researches upon the Venom of the Rattlesnake, with an investigation of the Anatomy and Physiology of the Organs Concerned, by Dr. S. W. Mitchell; on the Breathing Organs of Turtles, by Drs. Mitchell and Morehouse; on the Anatomy of the Nervous System of *Rana Pipiens*, by Dr. J. Wyman; and on the Medulla Oblongata, by Dr. John Dean.

Ethnology and Philology —One of the earliest efforts on the part of the Institution, was directed to the advancement of the science of American Ethnology. Its first publication, as well as introductory volume to the series of Smithsonian Contributions to Knowledge, being the work of Squier and Davis, on the Ancient Monuments of the Mississippi Valley, remains the standard treatise on this subject. This was followed by a similar work on the Antiquities of New York, by Mr. Squier; and those of Wisconsin, by Mr. Lapham; of Ohio and of Lake Superior, by Mr. Whittlesey; a Memoir on some Antiquities of Mexico, by Brantz Mayer; and a general introduction to the whole subject of American Archæology, by Mr. Haven, besides many articles of less extent in one or another of the Smithsonian series. Several pamphlets of instructions for making observations and collections in this science have also been issued.

In the department of Philology, also, the Institution has evinced its zeal and activity by the publication, among others, of the elaborate work on the Dakota Language, by Mr. Riggs; that on the Yoruba Language, by Mr. Bowen; and that on the Chinook Jargon, by Mr. Turner and Mr. Gibbs. To Mr. Shea, of New York, who is engaged in the preparation of a library of American languages, annual appropriations from the funds of the Institution have been made in furtherance of the publication of linguistic memoirs furnished by its correspondents.

Systematic efforts have been directed by the Institution to the collection of as perfect a series as possible of the specimens of American antiquities, and of those illustrative of the habits of the modern native tribes. Already an extensive collection has been accumulated, and the preparation and distribution of a series of colored casts of the more interesting specimens of aboriginal art have been commenced.

Correspondence.—The Institution has constantly received a large number of communications, asking information on a variety of subjects, particularly in regard to the solution of scientific questions, the names and characters of objects of natural history, and the analysis of soils, minerals, and other materials which pertain to the industrial resources of the country. Answers have in all cases been given to these inquiries, either directly by the officers of the Institution, or by reports from the Smithsonian collaborators. A considerable portion of the correspondence burned in the office of the secretary was of this character. The loss in this case is to be regretted, not only on account of the valuable information the letters and answers contained, but also on account of the illustration they afforded of the influence of the Institution, and the condition of the public mind at a given time. Every subject connected with science which strongly attracts popular attention, never fails to call forth a large number of inquiries and suggestions.

International Exchanges.—To facilitate the direct correspondence between the learned institutions and scientific men of the two worlds, and the free exchange of their publications, has, from the first, been a special object of attainment with the Smithsonian Institution. Year by year its plans for this purpose have been modified and improved, until the system has become as nearly complete and satisfactory as the funds and force at its disposal will allow. At the present day it is the great medium of scientific intercommunication between the New World and the Old; its benefits and services being recognized alike by individuals, institutions, and governments. Its parcels pass all the custom-houses without question or interference, while American and foreign lines of transportation, with rare exceptions, vie with each other in the extent of the privileges accorded to it. To so great an extent has its sphere of activity been enlarged, that it is no exaggeration to say that a very large proportion of all international exchanges of the kind referred to are now made through its instrumentality. At the present time the Institution is prepared to receive, at periods made known through its circulars, any books or pamphlets of scientific, literary, or benevolent character which any institutions or individuals in America may wish to present to a correspondent elsewhere, subject only to the condition of being delivered in Washington free of cost, and of being accompanied by a separate list of the parcels sent. Where any party may have special works to distribute, the Institution is always prepared to furnish a list of suitable recipients. In many cases where works of value have been published by the United States or State governments, likely to be of importance to students abroad, application has been made by the Institution for copies, in most cases with success. The articles and volumes, when received, are assorted and combined into packages, and these, after being properly addressed and inclosed in boxes, are despatched to the agents of the Institution in London, Leipsic, Paris, and Amsterdam. The boxes are there unpacked, and the contents distributed through the proper channels; the returns for these transmissions are received by the same agents, and boxed and forwarded to Washington, from which point the parcels for other parties are sent to their proper destination. All the expense of

packing, boxing, agencies, freights, &c., being borne by the Institution, with the exception of the local conveyance of single parcels by express, or otherwise, within the United States.

The Fire.

On the 24th of January, 1865, a fire occurred at the Institution, which caused the destruction of the upper part of the main building, and the towers. The loss to the Institution was as follows: 1. The official, scientific, and miscellaneous correspondence, record books, and manuscripts in the Secretary's office. 2. The large collection of apparatus. 3. The personal effects of Smithson. 4. A large stock of tools and instruments. 5. All the duplicate copies of Smithsonian Reports on hand for distribution. 6. The wood-cuts of illustrations used in the Smithsonian publications.

Besides these, Mr. Stanley lost his gallery of Indian portraits, which had been deposited in the Institution for a number of years; and a large quantity of private property was destroyed belonging to persons connected with the Institution.

The fire, however, caused no interruption in the business of the Institution; the library, museum, and laboratory were uninjured; all its operations were carried on as usual, and plans were immediately adopted for the reconstruction with fire-proof materials of the parts of the building which had been damaged or destroyed.

The Grounds.

The grounds around the building were laid out by the distinguished horticulturist and landscape gardener, Downing, but he died while engaged in the prosecution of his plans.

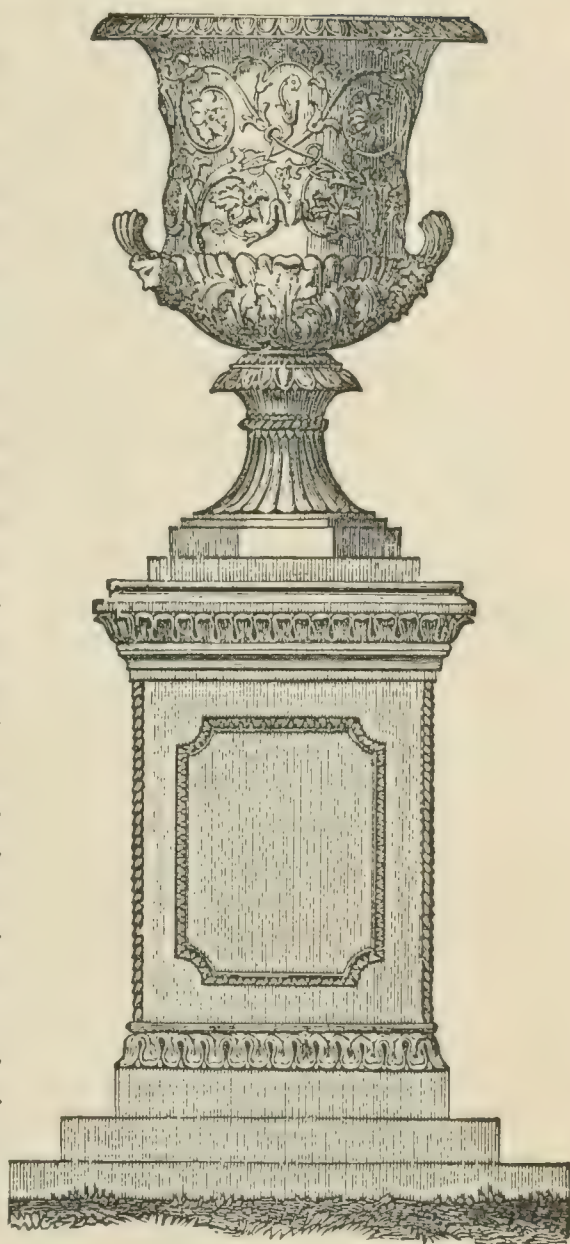
We are indebted to the editor of the "Rural New Yorker," for the following remarks relative to this subject, and for the representation of the marble monument erected to his memory:—

"When the sad tidings of the death of Andrew Jackson Downing were announced, many hearts were stricken, and many countenances saddened. Every lover of rural life and rural taste felt that a friend, a brother, and a leader had fallen. The homes of hundreds, from the foundation stone to the gable point, spoke of the departed—even the trees and flowers of the garden told a tale of sadness. The furniture in our parlors, the books in our libraries, spoke too plainly to our wounded hearts of the loved and lost. Scarcely a city or village in our country but presented some monument of his skill and taste, something to remind the people how great and irreparable was their loss—cottages whose simple yet elegant adornings taught how truly *taste* may be independent of wealth; windows tempting the eye from loveliness within, to the glorious prospect without; stately trees that seemed to guard like sentinels the sacred precincts of home, and village churches whose walls



and spires spoke of religion to the heart. It was at once proposed, in all parts of the country, by Horticultural and other Societies, that some suitable monument should be erected to the memory of Mr. Downing, and in 1852, the *American Pomological Society* appointed a committee to superintend this work. The design adopted by the committee was furnished by Calvert Vaux, of Newburgh, N. Y., the late partner of Mr. Downing, and the work executed by Robert Launitz, an eminent sculptor of New York. The monument was erected in the grounds of the Smithsonian Institution, at Washington, and it is worthy of remark, that Mr. Downing was engaged in laying out and beautifying these grounds at the time of his death. The committee made their final report at the Pomological meeting in September, 1856. The funds were supplied by friends of Mr. Downing, in Philadelphia, Newburgh, Boston, Washington, Louisville, Buffalo, and Rochester.

The principal design of the monument consists in a large vase resting on a pedestal, the whole executed of the finest Italian marble. The pattern of the vase is taken from an antique of the chastest school. The vase is four feet in height,



DOWNING MONUMENT.

and measures three feet in diameter on its upper rim. The body is ornamented with rich arabesque; acanthus leaves surround the lower part. The handles rest on heads of satyrs, (the tutelar gods of groves and woods.) The pedestal, resting on a carved base, and being surmounted with a carved cornice, has on each side deep panels, relieved by carved mouldings. Each of the panels contains an inscription; that upon the Northern Front reads as follows:

THIS VASE
Was erected by his Friends
IN MEMORY OF
ANDREW JACKSON DOWNING, .
Who died July 28, 1852, aged 37 years.

He was born, and lived,
And died upon the Hudson River.

His life was devoted to the improvement of the national taste
in rural art,
an office for which his genius and the natural beauty amidst
which he lived had fully endowed him.
His success was as great as his genius, and for the death of few
public men,
was public grief ever more sincere.
When these grounds were proposed, he was at once
called to design them ;
but before they were completed he perished in the wreck of the
steamer Henry Clay.
His mind was singularly just, penetrating, and original.
His manners were calm, reserved, and courteous.
His personal memory
belongs to the friends who loved him ;
his fame to the country which honored and laments him.

Inscription upon the Southern Front :

“ The taste of an individual,
as well as that of a nation, will be in direct proportion to the
profound sensibility
with which he perceives the beautiful in natural scenery.”

“ Open wide, therefore,
the doors of your libraries and picture galleries,
all ye true republicans !
Build halls where knowledge shall be freely diffused among men,
and not shut up within the narrow walls of
narrower institutions.
Plant spacious parks in your cities,
and unclose their gates as wide as the gates of morning to the
whole people.”

[*Downing's Rural Essays.*

Upon the Eastern Front is inscribed :

“ Weep no more,
For Lycidus your sorrow is not dead,
Sunk though he be beneath the wat'ry floor,
So sinks the day-star in the ocean bed,
And yet anon repairs his drooping head,
And tricks his beams, and with new spangled ore
Flames in the forehead of the morning sky ;
So Lycidus sunk low, but mounted high
Through the dear might of Him that walked the waves.”

Upon the Western Front is this Inscription :

I climb the hill from end to end,
Of all the landscape underneath
I find no place that does not breathe
Some gracious memory of my friend

'Tis held that sorrow makes us wise,
 Yet how much wisdom sleeps with thee,
 Which not alone had guided me,
 But served the seasons that may rise ;
 And doubtless unto thee is given
 A life that bears immortal fruit,
 In such great offices as suit
 The full grown energies of Heaven.
 And love will last as pure and whole
 As when he loved me here in time,
 And at the spiritual prime
 Re-waken with the dawning soul.

On the Base of the Pedestal is the following :

THIS MEMORIAL
 Was erected under a resolution passed at Philadelphia,
 in Sept., 1852, by the
 AMERICAN POMOLOGICAL SOCIETY,
 of which Mr. Downing was one of the
 original founders.

MARSHALL P. WILDER, *President*

The whole monument with its granite plinth is nine feet four inches in height
 and cost \$1,600



THE GATEWAY.

AN ACT
TO ESTABLISH
THE SMITHSONIAN INSTITUTION.

AN ACT to establish the "Smithsonian Institution," for the increase and diffusion of knowledge among men.

James Smithson, Esquire, of London, in the Kingdom of Great Britain, having by his last will and testament given the whole of his property to the United States of America, to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men; and the United States having, by an act of Congress, received said property and accepted said trust; therefore, for the faithful execution of said trust according to the will of the liberal and enlightened donor—

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President and Vice President of the United States, the Secretary of State, the Secretary of the Treasury, the Secretary of War, the Secretary of the Navy, the Postmaster General, the Attorney General, the Chief Justice, and the Commissioner of the Patent Office of the United States, and the Mayor of the city of Washington, during the time for which they shall hold their respective offices, and such other persons as they may elect honorary members, be, and they are hereby, constituted and "establishment," by the name of the "Smithsonian Institution," for the increase and diffusion of knowledge among men; and by that name shall be known and have perpetual succession, with the powers, limitations, and restrictions hereinafter contained, and no other.

SEC. 2. *And be it further enacted,* That so much of the property of the said James Smithson as has been received in

money, and paid into the Treasury of the United States, being the sum of five hundred and fifteen thousand one hundred and sixty-nine dollars, be lent to the United States Treasury, at six per cent. per annum interest from the first day of September, in the year one thousand eight hundred and thirty-eight, when the same was received into the said treasury; and that so much of the interest as may have accrued on said sum on the first day of July next, which will amount to the sum of two hundred and forty-two thousand one hundred and twenty-nine dollars, or so much thereof as shall by the Board of Regents of the Institution established by this act be deemed necessary, be, and the same is hereby, appropriated for the erection of suitable buildings, and for other current incidental expenses of said Institution; and that six per cent. interest on the said trust fund—it being the said amount of five hundred and fifteen thousand one hundred and sixty-nine dollars received into United States Treasury on the first of September, one thousand eight hundred and thirty-eight, payable, in half-yearly payments, on the first of January and July in each year be, and the same is hereby, appropriated for the perpetual maintainance and support of said Institution; and all expenditures and appropriations to be made from time to time, to the purposes of the Institution aforesaid, shall be exclusively from the accruing interest, and not from the principal of the said fund. *And be it further enacted,* That all the moneys and stocks which have been, or may hereafter be, received into the Treasury of the United States on account of the fund bequeathed by James Smithson, be, and hereby are, pledged to refund to the Treasury of the United States the sums hereby appropriated.

SEC. 3. *And be it further enacted,* That the business of the said Institution shall be conducted at the city of Washington by a Board of Regents by the name of the Regents of the “Smithsonian Institution,” to be composed of the Vice President of the United States, the Chief Justice

of the United States, and the mayor of the city of Washington, during the time for which they shall hold their respective offices ; three members of the Senate and three members of the House of Representatives, together with six other persons, other than members of Congress, two of whom shall be members of the National Institute in the city of Washington, and resident in the said city ; and the other four thereof shall be inhabitants of States, and no two of them of the same State. And the Regents, to be selected as aforesaid, shall be appointed immediately after the passage of this act—the members of the Senate by the President thereof, the members of the House by the Speaker thereof, and the six other persons by joint resolution of the Senate and House of Representatives ; and the members of the House so appointed shall serve until the fourth Wednesday in December, the second next after the passage of this act ; and then, and biennially thereafter, on every alternate fourth Wednesday of December, a like number shall be appointed in the same manner, to serve until the fourth Wednesday in December, the second succeeding their appointment. And the Senators so appointed shall serve during the term for which they shall hold, without re-election, their office as Senators. And vacancies, occasioned by death, resignation, or otherwise, shall be filled as vacancies in committees are filled ; and the other six members aforesaid shall serve, two for two years, two for four years, and two for six years ; the terms of service, in the first place, to be determined by lot ; but after the first term, then their regular term of service shall be six years ; and new elections thereof shall be made by joint resolution of Congress ; and vacancies occasioned by death, resignation, or otherwise, may be filled in like manner, by joint resolution of Congress. And the said Regents shall meet in the city of Washington on the first Monday of September next after the passage of this act, and organize by the election of one of their number as Chancellor, who shall be the presiding

officer of said Board of Regents, by the name of the Chancellor of the "Smithsonian Institution," and a suitable person as Secretary of said Institution, who shall also be the Secretary of said Board of Regents; said Board shall also elect three of their own body as an Executive Committee, and said Regents shall then fix on the time for the regular meeting, of said Board; and on application of any three of the Regents to the Secretary of the said Institution, it shall be his duty to appoint a special meeting of the Board of Regents, of which he shall give notice by letter to each of the members; and at any meeting of said Board, five shall constitute a quorum to do business. And each member of said Board shall be paid his necessary travelling and other actual expenses in attending meetings of the Board, which shall be audited by the Executive Committee, and recorded by the Secretary of said Board; but his services as Regent shall be gratuitous. And whenever money is required for the payment of the debts or performance of the contracts of the Institution, incurred or entered into in conformity with the provisions of this act, or for making the purchases and executing the objects authorized by this act, the Board of Regents, or the Executive Committee thereof, may certify to the Chancellor and Secretary of the Board that such sum of money is required; whereupon, they shall examine the same, and, if they shall approve thereof, shall certify the same to the proper officer of the Treasury for payment. And the said Board shall submit to Congress, at each session thereof, a report of the operations, expenditures, and condition of the Institution.

SEC. 4. *And be it further enacted,* That after the Board of Regents shall have met, and become organized, it shall be their duty forthwith to proceed to select a suitable site for such building as may be necessary for the Institution; which ground may be taken and appropriated out of that part of the public ground in the city of Washington, lying between the Patent Office and Seventh street: *Provided,* The Presi-

dent of the United States, the Secretary of State, the Secretary of the Treasury, the Secretary of War, the Secretary of the Navy, and the Commissioner of the Patent Office, shall consent to the same; but if the persons last named shall not consent, then such location may be made upon any other of the public grounds within the city of Washington, belonging to the United States, which said Regents may select, by and with the consent of the persons herein named; and the said ground so selected shall be set out by proper metes and bounds, and a description of the same shall be made and recorded in a book to be provided for that purpose, and signed by the said Regents, or so many of them as may be convened at the time of their said organization; and such record, or a copy thereof, certified by the Chancellor and Secretary of the Board of Regents, shall be received in evidence in all courts of the extent and boundaries of the lands appropriated to the said Institution; and upon the making of such record, such site and lands shall be deemed and taken to be appropriated, by force of this act, to the said Institution.

SEC. 5. *And be it further enacted*, That, so soon as the Board of Regents shall have selected the said site, they shall cause to be erected a suitable building, of plain and durable materials and structure, without unnecessary ornament, and of sufficient size, and with suitable rooms, or halls, for the reception and arrangement, upon a liberal scale, of objects of natural history, including a geological and mineralogical cabinet; also a chemical laboratory, a library, a gallery of art, and the necessary lecture rooms; and the said Board shall have authority, by themselves or by a committee of three of their members, to contract for the completion of such building, upon such plan as may be directed by the Board of Regents, and shall take sufficient security for the building and finishing the same according to the said plan, and in the time stipulated in such contract; and may so locate said building, if they shall deem it proper, as in appearance

to form a wing to the Patent Office building, and may so connect the same with the present hall of said Patent Office building, containing the National Cabinet of Curiosities, as to constitute the said hall, in whole or in part, the deposite for the cabinet of said Institution, if they deem it expedient to do so; provided said building shall be located upon said Patent Office lot in the manner aforesaid: *Provided, however,* That the whole expense of building and enclosures aforesaid shall not exceed the amount of ———; which sum is hereby appropriated, payable out of money in the Treasury not otherwise appropriated; together with such sum or sums out of the annual interest accruing to the Institution, as may, in any year, remain unexpended, after paying the current expenses of the Institution. And duplicates of all such contracts as may be made by the said Board of Regents shall be deposited with the Treasurer of the United States; and all claims on any contract made as aforesaid shall be allowed and certified by the Board of Regents, or the Executive Committee thereof, as the case may be, and, being signed by the Chancellor and Secretary of the Board, shall be a sufficient voucher for settlement and payment at the Treasury of the United States. And the Board of Regents shall be authorized to employ such persons as they may deem necessary to superintend the erection of the buildings and fitting up the rooms of the Institution. And all laws for the protection of public property in the city of Washington shall apply to, and be in force for, the protection of the lands, buildings, and other property of said Institution. And all moneys recovered by, or accruing to, the Institution, shall be paid into the Treasury of the United States to the credit of the Smithsonian bequest, and separately accounted for, as provided in the act approved July first, eighteen hundred and thirty-six, accepting said bequest.

SEC. 6. *And be it further enacted,* That, in proportion as suitable arrangements can be made for their reception,

all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens belonging, or hereafter to belong, to the United States, which may be in the city of Washington, in whosoever custody the same may be, shall be delivered to such persons as may be authorized by the Board of Regents to receive them, and shall be arranged in such order, and so classed, as best facilitate the examination and study of them, in the building so as aforesaid to be erected for the Institution; and the Regents of said Institution shall afterwards, as new specimens in natural history, geology, or mineralogy, may be obtained for the museum of the Institution, by exchanges of duplicate specimens belonging to the Institution, (which they are hereby authorized to make,) or by donation, which they may receive, or otherwise, cause such new specimens to be also appropriately classed and arranged. And the minerals, books, manuscripts, and other property of James Smithson, which have been received by the Government of the United States, and are now placed in the Department of State, shall be removed to said Institution, and shall be preserved separate and apart from other property of the Institution.

SEC. 7. *And be it further enacted,* That the Secretary of the Board of Regents shall take charge of the building and property of said Institution, and shall, under their direction, make a fair and accurate record of all their proceedings, to be preserved in said Institution; and the said Secretary shall also discharge the duties of librarian and keeper of the museum, and may, with the consent of the Board of Regents, employ assistants; and the said officers shall receive for their services such sums as may be allowed by the Board of Regents; to be paid semi-annually on the first day of January and July; and the said officers shall be removable by the Board of Regents, whenever, in their judgment, the interests of the Institution require any of the said officers to be changed.

SEC. 8. *And be it further enacted*, That the members and honorary members of said Institution may hold such stated and special meetings, for the supervision of the affairs of said Institution and the advice and instruction of said Board of Regents, to be called in the manner provided for in the by-laws of said Institution, at which the President, and, in his absence, the Vice-President of the United States shall preside. And the said Regents shall make, from the interest of said fund, an appropriation, not exceeding an average of twenty-five thousand dollars annually, for the gradual formation of a library composed of valuable works pertaining to all departments of human knowledge.

SEC. 9. *And be it further enacted*, That of any other moneys which have accrued, or shall hereafter accrue, as interest upon the said Smithsonian fund, not herein appropriated, or not required for the purposes herein provided, the said managers are hereby authorized to make such disposal as they shall deem best suited for the promotion of the purpose of the testator, anything herein contained to the contrary notwithstanding.

SEC. 10. *And be it further enacted*, That the author or proprietor of any book, map, chart, musical composition, print, cut, or engraving, for which a copyright shall be secured under the existing acts of Congress, or those which shall hereafter be enacted respecting copyrights, shall, within three months from the publication of said book, map, chart, musical composition, print, cut, or engraving, deliver, or cause to be delivered, one copy of the same to the Librarian of the Smithsonian Institution, and one copy to the Librarian of Congress Library, for the use of the said libraries.

SEC. 11. *And be it further enacted*, That there is reserved to Congress the right of altering, amending, adding to, or repealing any of the provisions of this act: *Provided*, That no contract, or individual right, made or acquired under such provisions, shall be thereby divested or impaired.

Approved August 10, 1846.

SMITHSONIAN BEQUEST.

[To accompany bill H. R. No. 187.]

JANUARY 19, 1836.

CONGRESS OF THE UNITED STATES.

IN THE HOUSE OF REPRESENTATIVES, *December 21, 1835.*

The message of the President of the United States, in relation to the bequest of James Smithson, of London, for founding at Washington an "institution for the increase and diffusion of knowledge among men;" was referred to a select committee; and

Mr. John Quincy Adams, of Massachusetts, Mr. Thomas, of Maryland, Mr. Garland, of Virginia, Mr. Pearce, of Rhode Island, Mr. Speight, of North Carolina, Mr. McKennon, of Pennsylvania, Mr. Hannegan, of Indiana, Mr. Garland, of Louisiana, and Mr. Chapin, of New York, were appointed the said committee.

Mr. ADAMS, from the Select Committee on the message of the President relating to the bequest of James Smithson, made the following

REPORT:

The Select Committee, to which was referred the message of the President of the United States, of the 17th of December last, with documents relating to the bequest of James Smithson, of London, to the United States of America, for the purpose of founding at Washington, an establishment under the name of the Smithsonian Institution, for the increase and diffusion of knowledge among men, respectfully report:

That, from the papers transmitted to Congress with the message of the President, it appears, that James Smithson, a foreigner, of noble family and of affluent fortune, did, by his last will and testament, made in the year 1826, bequeath, under certain contingencies, which have since been realized, and with certain exceptions, for which provision was made by the same will, the whole of his property, of an amount exceeding four hundred thousand dollars, to the United States of America, to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men.

To the acceptance of this bequest, and to the assumption and fulfilment of the high and honorable duties involved in the performance of the trust committed with it, the Congress of the United States, in their legislative capacity, are alone competent. Your committee believe, not only that they are thus competent, but that it is enjoined upon them, by considerations of the most imperious and indispensable obligation. The first steps necessary to be taken for carrying into effect the benevolent intentions of

the testator, must be to obtain the possession of the funds, now held by the Messrs. Drummonds, bankers in London, executors of Mr. Smithson's will, and subject to the superintendence, custody and adjudication of the Lord Chancellor of England. To enable the President of the United States to effect this object, the committee report herewith a bill.

But your committee think they would imperfectly discharge their duty to this House, to their country, to the world of mankind, or to the donor of this most munificent bequest, were they to withhold a few brief reflections, which have occurred to them in the consideration of the subject referred to them by the House. Reflections arising from the condition of the testator, from the nature of the bequest and from the character of the trustee to whom this great and solemn charge has been confided.

The testator, James Smithson, a subject of Great Britain, declares himself, in the caption to the will, a descendent in blood from the Percys and the Seymours, two of the most illustrious *historical* names of the British islands. Nearly two centuries since, in 1660, the ancestor of his own name, Hugh Smithson, immediately after the restoration of the royal family of the Stuarts, received from Charles the Second, as a reward for his eminent services to that house during the civil wars, the dignity of a Baronet of England, a dignity still held by the Dukes of Northumberland, as descendants from the same Hugh Smithson. The father of the testator, by his marriage with the Lady Elizabeth Seymour, who was descended by a female line from the ancient Percys, and by the subsequent creation of George the Third, in 1766, became the first Duke of Northumberland. His son and successor, the brother of the testator, was known in the history of our revolutionary war by the name of Lord Percy; was present, as a British officer, at the sanguinary opening scene of our revolutionary war, at Lexington, and at the battle of Bunker's hill; and was the bearer to the British Government of the despatches from the commander-in-chief of the royal forces, announcing the event of that memorable day; and the present Duke of Northumberland, the testator's nephew, was the ambassador extraordinary of Great Britain, sent to assist at the coronation of the late King of France, Charles the Tenth, a few months only before the date of this bequest from his relative to the United States of America.

The suggestions which present themselves to the mind, by the association of these historical recollections, with the condition of the testator, derive additional interest from the nature of the bequest; the devotion of a large estate to an institution for the increase and diffusion of knowledge among men.

Of all the foundations of establishments for pious or charitable uses, which ever signalized the spirit of the age, or the comprehensive beneficence of the founder, none can be named more deserving of the approbation of mankind than this. Should it be faithfully carried into effect, with an earnestness and sagacity of application, and a steady perseverance of pursuit, proportioned to the means furnished by the will of the founder, and to the greatness and simplicity of his design as by himself declared, "the increase and diffusion of knowledge among men," it is no extravagance of anticipation to declare, that his name will be hereafter enrolled among the eminent benefactors of mankind.

The attainment of knowledge, is the high and exclusive attribute of man, among the numberless myriads of animated beings inhabitants of the terrestrial globe. On him alone is bestowed, by the bounty of the Creator of the universe, the power and the capacity of acquiring knowledge.

Knowledge is the attribute of his nature, which at once enables him to improve his condition upon earth, and to prepare him for the enjoyment of a happier existence hereafter. It is by this attribute that man discovers his own nature as the link between earth and heaven; as the partaker of an immortal spirit; as created for higher and more durable ends, than the countless tribes of beings which people the earth, the ocean, and the air, alternately instinct with life, and melting into vapour, or mouldering into dust.

To furnish the means of acquiring knowledge is, therefore, the greatest benefit that can be conferred upon mankind. It prolongs life itself, and enlarges the sphere of existence. The earth was given to man for cultivation, to the improvement of his own condition. Whoever increases his knowledge, multiplies the uses to which he is enabled to turn the gift of his Creator to his own benefit, and partakes in some degree of that goodness which is the highest attribute of Omnipotence itself.

If then the Smithsonian Institution, under the smile of an approving Providence, and by the faithful and permanent application of the means furnished by its founder, to the purpose for which he has bestowed them, should prove effective to their promotion; if they should contribute essentially to the *increase and diffusion of knowledge among men*, to what higher or nobler object could this generous and splendid donation have been devoted?

The father of the testator, upon forming his alliance with the heiress of the family of the Percys, assumed, by an act of the British Parliament, that name, and under it became Duke of Northumberland. But, renowned as is the name of Percy in the historical annals of England, resounding as it does from the summit of the Cheviot hills, to the ears of our children, in the ballad of Chevy Chase, with the classical commentary of Addison; freshened and renovated in our memory as it has recently been from the purest fountain of poetical inspiration, in the loftier strain of Alnwick Castle, tuned by a bard of our own native land;* doubly immortalized as it is in the deathless dramas of Shakespear; "confident against the world in arms," as it may have been in ages long past, and may still be in the virtues of its present possessors by inheritance; let the trust of James Smithson to the United States of America, be faithfully executed by their Representatives in Congress; let the result accomplish his object, "the increase and diffusion of knowledge among men," and a wreath of more unfading verdure shall entwine itself in the lapse of future ages around the name of Smithson, than the united hands of tradition, history and poetry, have braided around the name of Percy, through the long perspective in ages past of a thousand years.

It is then a high and solemn trust which the testator has committed to the United States of America, and its execution devolves upon their Representatives in Congress, duties of no ordinary importance. The location of the institution at Washington, prescribed by the testator, gives to Congress the free exercise of all the powers relating to this subject with which they are, by the constitution, invested as the local Legislature for the District of Columbia. In adverting to the character of the trustee selected by the testator for the fulfilment of his intentions, your committee deem it no indulgence of unreasonable pride to mark it as a signal manifestation of the moral effect of our political institutions, upon the opinions, and upon the consequent action of the wise and the good of other regions, and of distant

climes; even upon that nation from whom we generally boast of our descent, but whom from the period of our revolution we have had too often reason to consider as a jealous and envious rival. How different are the sensations which should swell in our bosoms with the acceptance of this bequest! James Smithson, an Englishman, in the exercise of his rights as a free-born Briton, desirous of dedicating his ample fortune to the increase and diffusion of knowledge among men, constitutes for his trustees, to accomplish that object, the United States of America, and fixes upon their seat of Government as the spot where the institution of which he is the founder, shall be located.

The revolution, which resulted in the independence of those United States, was commenced, conducted, and consummated under a mere union of confederated States. Subsequently to that period, a more perfect union was formed, combining in one system the principle of confederate sovereignties with that of a Government by popular representation, with legislative, executive, and judicial powers, all limited, but co-extensive with the whole confederation.

Under this Government, a new experiment in the history of mankind is now drawing to the close of half a century, during which the territory and number of States in the Union have nearly doubled, while their population, wealth, and power have been multiplied more than fourfold. In the process of this experiment, they have gone through the vicissitudes of peace and war, amidst bitter and ardent party collisions, and the unceasing changes of popular elections to the legislative and executive offices, both of the general confederacy and of the separate States, without a single execution for treason, or a single proscription for a political offence. The whole Government, under the continual superintendence of the whole people, has been holding a steady course of prosperity, unexampled in the cotemporary history of other nations, not less than in the annals of ages past. During this period, our country has been freely visited by observers from other lands, and often in no friendly spirit by travellers from the native land of Mr. Smithson. Their reports of the prevailing manners, opinions and social intercourse of the people of this Union, have exhibited no flattering or complacent pictures. All the infirmities and vices of our civil and political condition have been combed and noyed, and displayed with no forbearance of severe satirical comment to set them off; yet, after all this, a British subject, of noble birth and ample fortune, desiring to bequeath his whole estate to the purpose of increasing and diffusing knowledge throughout the whole community of civilized man, selects for the depositaries of his trust, with confidence unqualified with reserve, the Congress of the United States of America.

In the commission of every trust, there is an implied tribute of the soul to the integrity and intelligence of the trustee: and there is also an implied call for the faithful exercise of those properties to the fulfilment of the purpose of the trust. The tribute and the call acquire additional force and energy, when the trust is committed for performance after the decease of him by whom it is granted, when he no longer exists to witness or to constrain the effective fulfilment of his design. The magnitude of the trust, and the extent of confidence bestowed in the committal of it, do but enlarge and aggravate the pressure of the obligation which it carries with it. The weight of duty imposed is proportioned to the honor conferred by confidence without reserve. Your committee are fully persuaded, therefore, that, with a grateful sense of the honor conferred by the testator,

upon the political institutions of this Union, the Congress of the United States, in accepting the bequest, will feel, in all its power and plentitude, the obligation of responding to the confidence reposed by him, with all the fidelity, disinterestedness, and perseverance of exertion, which may carry into effective execution the noble purpose of an endowment for the increase and diffusion of knowledge among men.

SMITHSONIAN BEQUEST.

Message from the President of the United States, in relation to the bequest to the United States, by James Smithson, of London, for founding at Washington an establishment, to be styled "The Smithsonian Institution, for the increase and diffusion of knowledge among men."

WASHINGTON, December 17, 1835.

*To the Senate and House of Representatives
of the United States:*

I transmit to Congress a report from the Secretary of State, accompanying copies of certain papers relating to a bequest to the United States, by Mr. James Smithson, of London, for the purpose of founding, at Washington, an establishment, under the name of the Smithsonian Institution, "for the increase and diffusion of knowledge among men." The Executive having no authority to take any steps for accepting the trust, and obtaining the funds, the papers are communicated with a view to such measures as Congress may deem necessary.

ANDREW JACKSON.

DEPARTMENT OF STATE,

Washington, December 16, 1835.

The Secretary of State has the honor to submit to the President the copy of a recent correspondence in regard to a bequest made to the United States, for the purpose of founding, at Washington, an institution "for the increase and diffusion of knowledge among men;" and, at the same time, respectfully to suggest the propriety of laying these papers before Congress, with a view to the adoption of such measures, on their part, as the nature of the subject may seem to require.

JOHN FORSYTH.

To the PRESIDENT of the United States.

LEGATION OF THE UNITED STATES,

London, July 28, 1835.

SIR: The papers which I have the honor herewith to communicate to you, will acquaint you with the particulars of a bequest of property to a large amount, left to the United States by a Mr. James Smithson, for the purpose, as stated in the will, of founding, at Washington, an institution "for the increase and diffusion of knowledge among men." * * * The letter of Messrs. Clarke, Fynmore & Fladgate, the solicitors, by whom I was apprised of the existence of the will, together with the inquiries I have made, leave no doubt of its having been established, and its dispositions recognised by the court of chancery, the first legatee under it having, for several years,

and to the time of his death, received the income of the property, which is stated to have amounted to upwards of £4,000 per annum.

According to the view taken of the case by the solicitors, it is now for the United States, in the event of their accepting the bequest and the trust coupled with it, to come forward, by their representative, and make themselves parties to an amicable suit before the Lord Chancellor, for the purpose of legally establishing the fact of the demise of the first legatee without children, and intestate; prove their claim to the benefit of the will, and obtain a decree in chancery, awarding them the proceeds of the estate. Messrs. Clarke, Fynmore & Pladgate are willing to undertake the management of the suit on the part of the United States: and, from what I have learned of their standing, may safely be confided in. Not being acquainted with the exact structure of our institutions, they are not able to point out the exact manner in which the United States should be represented in the contemplated suit: but they believe that their diplomatic agent here, if constituted, for that purpose, the legal representative of the President, would be recognised by the court of chancery as the proper organ of the United States, for all the purposes of the will.

Should it be thought unnecessary to await the action of Congress to authorize the institution of the requisite legal proceedings, and should the course suggested by the solicitors meet the views of the President, his power of attorney, authorizing the diplomatic agent here to act in his name, will, I apprehend, be necessary: and, as the suit will involve some expense not connected with the contingent fund of the legation, your instructions upon this branch of the subject will likewise be desirable.

I am, sir, with great respect,

Your obedient servant,

A. VAIL.

JOHN FORSYTH, Esquire,

Secretary of State of the United States, Washington.

SIR: We send you, enclosed, the copy of a will of Mr. Smithson, on the subject of which we yesterday did ourselves the pleasure of waiting upon you, and we avail ourselves of the opportunity to repeat, in writing, what we verbally communicated.

Pursuant to the instructions contained in the will, an amicable suit was, on the death of the testator, instituted in chancery by Mr. Hungerford, against Messrs. Drummonds, the executors, under which suit the assets were realized. They were very considerable; and there is now standing, in the name of the accountant general of the court of chancery, on the trusts of the will, stock amounting in value to about £100,000. During Mr. Hungerford's life he received the income arising from this property; but news has just reached England that Mr. Hungerford has died abroad, leaving no child surviving him.

It now becomes necessary that measures should be taken for the purpose of getting the decision of the court of chancery, as to the further disposition of the property. On reference to the will, it will appear that it is not very clearly defined to whom, on behalf of the United States, the property should be paid or transferred: indeed, there is so much doubt, that we apprehend that the attorney general must, on behalf of the crown of England, be joined in the proceedings which it is requisite that the United States should institute.

We act in this matter for Messrs. Drummond, the bankers, who are mere stake-holders, and who are ready to do all in their power to facilitate getting the decision of the court, and carrying into effect the testator's intentions. We shall therefore be happy to communicate with such professional advisers as your Government may think fit to appoint to act for them in this country. In the mean time, we may perhaps be permitted to add, that it is perfectly competent for us to carry on the proceedings, on behalf of the United States, and possibly some expense and delay may be avoided by our so doing.

Having thus briefly stated the nature of the business, we at present abstain from making any suggestion as to the party in whose name proceedings should be adopted, considering the point should be determined by our counsel here, after the opinion of the proper law officers in the States has been taken on the subject.

Any further information you may require, we shall be happy to give you, and are, sir,

Your most obedient servants,

CLARK, FYNMORE & FLADGATE,

Craven street, Strand, 21st July, 1835.

A. VAIL, Esquire, 49 *York Terrace*.

I, James Smithson, son of Hugh, first Duke of Northumberland, and Elizabeth, heiress of the Hungerfords of Audley, and niece of Charles the Proud, Duke of Somerset, now residing in Bentinck street, Cavendish square, do this 23d day of October, 1826, make this my last will and testament.

I bequeath the whole of my property of every nature and kind soever, to my bankers, Messrs. Drummonds of Charing Cross, in trust, to be disposed of in the following manner, and desire of my said executors to put my property under the management of the court of chancery.

To John Fitall, formerly my servant, but now employed in the London Docks, and residing at No. 27 Jubilee Place, North Mile End, Old Town, in consideration of his attachment and fidelity to me, and the long and great care he has taken of my effects, and my having done but very little for him, I give and bequeath the annuity or annual sum of £100 sterling for his life, to be paid to him quarterly, free from legacy duty, and all other deductions, the first payment to be made to him at the expiration of three months after my death. I have at divers times lent sums of money to Henry Honoré Juilly, formerly my servant, but now keeping the Hungerford Hotel, in the Rue Caumartin at Paris, and for which sums of money I have undated bills or bonds signed by him. Now, I will and direct that if he desires it, these sums of money be let remain in his hands at an interest of five per cent. for five years after the date of the present will.

To Henry James Hungerford, my nephew, heretofore called Henry James Dickinson, son of my late brother Lieut. Col. Henry Louis Dickinson, now residing with Mr. Auboin, at Bourg la Reine, near Paris, I give and bequeath for his life the whole of the income arising from my property of every nature and kind whatever, after the payment of the above annuity, and after the death of John Fitall, that annuity likewise, the payments to be at the time the interest or dividends become due on the stocks or other property from which the income arises.

Should the said Henry James Hungerford have a child or children, legitimate or illegitimate, I leave to such child or children, his or their heirs, executors and assigns, after the death of his, her or their father, the whole of my property, of every kind, absolutely and forever, to be divided between

them, if there is more than one, in the manner their father shall judge proper, and in case of his omitting to decide this, as the Lord Chancellor shall judge proper.

Should my said nephew, Henry James Hungerford marry, I empower him to make a jointure.

In case of the death of my said nephew without leaving a child or children, or of the death of the child or children he may have had under the age of 21 years or intestate, I then bequeath the whole of my property, subject to the annuity of £100 to John Fitall, and for the security and payment of which I mean stock to remain in this country, to the United States of America, to found, at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men.

I think it proper here to state, that all the money which will be standing in the French five per cents. at my death, in the names of the father of my above mentioned nephew, Henry James Hungerford, and all that in my name, is the property of my said nephew, being what he inherited from his father, or what I have laid up for him from the savings upon his income.

JAMES SMITHSON, [L. s.]

DEPARTMENT OF STATE,

Washington, September 26, 1835.

SIR: I have the honor to acknowledge the receipt of your despatch of 28th July last, (No. 197,) relative to a bequest of property to a large amount left to the United States by Mr. James Smithson, for the purpose of founding at Washington an institution "for the increase and diffusion of knowledge among men;" and to inform you that your letter, and the papers which accompanied it, have been submitted to the President, who has determined to lay the subject before Congress at its next session. The result of its deliberations, when obtained, shall be communicated to you, with the necessary instructions.

Of the course intended to be pursued in relation to this matter, as above explained, you will take occasion to acquaint the solicitors who apprized you of the existence of Mr. Smithson's will.

I am, sir, your obedient servant,

JOHN FORSYTH.

AARON VAIL, Esquire,

Charge d'Affaires of the United States, London.

IN THE HOUSE OF REPRESENTATIVES, *January 19, 1836.*

On motion of Mr. Chapin, of New York, it was

Ordered, That five thousand extra copies of the report submitted by the honorable chairman of the select committee, together with the message of the President of the United States, correspondence, and will relating to the bequest of James Smithson, of London, at Washington, an establishment for the increase and diffusion of knowledge among men, be printed for the use of the House.

BEQUEST OF JAMES SMITHSON.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

The information in relation to the bequest of James Smithson, late of London, required by a resolution of the House of Representatives of the 23d instant.

DECEMBER 30, 1836.

Read, and laid upon the table.

To the House of Representatives of the United States :

In compliance with the resolution of the House of Representatives, of the 23d instant, I herewith transmit a report from the Secretary of State, to whom the resolution was referred, containing all the information upon the subject which he is now able to communicate.

ANDREW JACKSON.

WASHINGTON, *December 28, 1836.*

DEPARTMENT OF STATE,

Washington, December 28, 1836.

The Secretary of State, to whom has been referred the resolution of the House of Representatives, dated the 23d instant, requesting the President, "if he shall deem it consistent with the public interests, to communicate to that House all information he may have obtained in relation to the bequest of James Smithson, late of London, deceased, to found an institution at Washington for the diffusion of knowledge among men, since the appointment of an agent under the act of Congress of the last session," has the honor to report to the President, in answer to the above recited resolution, the accompanying copy of a letter from the agent of the United States now in London.

Respectfully submitted.

JOHN FORSYTH.

'To the PRESIDENT OF THE UNITED STATES.

PORTLAND HOTEL, GREAT PORTLAND STREET,
London, September 14, 1836.

GENTLEMEN: Referring to your correspondence with the chargé d'affaires of the United States, in July, 1835, on the Smithsonian bequest to the United States, I beg leave to inform you that I have arrived here with full power from the President, founded on an act of Congress, to assert the right of the United States to that bequest, and receive the money. I should be happy to have an interview with you on this subject: to which end I ask the favor of you to call upon me on Friday morning at 11 o'clock: or, should that be inconvenient to you, at such other time, near at hand, as you will have the goodness to name.

I remain your most obedient servant,

RICHARD RUSH.

To Messrs. CLARKE, FYNMORE & FLADGATE,
Solicitors, Craven street, Strand.

LONDON, *September 24, 1836.*

SIR: I had the honor to inform you, on the 31st of August, of my arrival at Liverpool, having embarked in the first ship that sailed from New York after my letter of the 1st of August, informing you that I was ready.

I reached this city the early part of the present month, and, as soon as circumstances would permit, entered upon the duty which the President's power of attorney devolves upon me.

Towards asserting and prosecuting with effect before the legal tribunals of England the claim of the United States to the legacy bequeathed to them by James Smithson of London, to found, at Washington, an institution "for the increase and diffusion of knowledge among men," the first consideration which seemed to present itself was, the selection of fit legal characters here, through whose aid and instrumentality the incipient steps could alone be judiciously marked out or adopted. In a country where the profession of the law is known to be so subdivided as in this, I regarded it important that not only the counsel whose services it may ultimately become necessary to engage, but the solicitors to be approached in the first instance, should have a standing suited to the nature of the case, and dignity of the constituent I represent. The letter addressed you in July, 1835, by the late chargé d'affaires of the United States at this court, left little doubt, indeed, that Messrs. Clarke, Fynmore, and Fladgate were proper solicitors; yet, as the President's power to me, and your instructions, appeared to place the whole subject anew in my hands, some previous inquiry into their standing seemed necessary on my part. This I set on foot, and am glad to say that it ended to my satisfaction: the mere, as their connexion with the case in its origin naturally pointed to their selection, other grounds continuing to justify it.

Accordingly, on the 14th instant, I addressed a note to these solicitors informing them that I had arrived in this country with full power from the President, founded upon an act of Congress, to assert the right of the United States to the Smithsonian bequest, and receive the money; and requesting that they would call upon me on the 16th. A copy of my note is enclosed. This is a season of the year when professional and official business of every kind

is much at a pause in London, and those who conduct it dispersed. It was not until the 20th that I was enabled to command an interview with these gentlemen, when two of them, Mr. Clarke and Mr. Fladgate, waited upon me, the latter having previously called, after receiving my note, to mention the absence of his associates from town. With these two, I had the preliminary conversation suited to a first interview. They chiefly went over the grounds stated in their note of the 21st of July, to our *chargé d'affaires*, Mr. Vail; in some points enlarging them and giving new particulars. They said that James Smithson, the testator, died in June, 1829; that his will was proved in the prerogative court of Canterbury, by Mr. Charles Drummond, one of the executors, and one of the banking-house of that name in London: that Henry James Hungerford, the testator's nephew, to whom was bequeathed the whole of his property for life, subject to a small annuity to another person, brought an amicable suit in chancery against Messrs. Drummond, the executors, for the purpose of having the testator's assets administered under the direction of the Lord Chancellor; in the course of which suit the usual orders and decrees were made, and by its issue assets ascertained and realized to the value of about one hundred thousand pounds sterling; that Mr. Hungerford, who resided out of England, received up to the time of his death the dividends arising from the property, which consisted of stock in the public funds: and that he died at Pisa, on the 5th of June, 1835, of full age, though still young, without having been married, and, as far as is yet known, without illegitimate child or children: that the assets of the estate are now invested in the name of the accountant-general of the court of chancery, subject to the further disposition of the court; that the will of Mr. Smithson having made the United States the final legatee on Mr. Hungerford's death without child or children, legitimate or illegitimate, the facts seem to have happened under which their right will attach: but the solicitors continue to think that a suit, or legal proceedings of some nature, to which the United States must be party, will have to be instituted in the court of chancery, in order to make valid their right and enable them to get possession of the fund, now in the hands of the court, and subject to its judgment.

The foregoing formed the main purport of their communication. They added, that the mother of Henry James Hungerford, who is still living, and married to a Frenchman of the name of De la Battut, has put in a claim to a part of the property; but as the claim is small and not likely to come to much, the mother of Mr. Hungerford not having been married to his father, it is scarcely necessary at this time to detail the circumstances.

I asked at what time from the present the earliest sitting of the court of chancery would be held. They replied in November. It will be my object to get the fund for the United States without a lawsuit in chancery of any kind, if this be practicable; and towards an end so desirable, my further reflections and measures will for a while be directed, taking care that I do not lose the advantage of all proper applications at the first term of the court, for whatever form of suit or other legal proceedings may be found indispensable.

I have nothing further of any importance to communicate at this juncture. I delivered to the minister of the United States, Mr. Stevenson, the letter from the acting Secretary of State of July 27th, requesting his good offices in behalf of the public object with which I am charged, should they

be needed ; and I cannot close this letter without adding that I have already received co-operation from him that has been useful, and which gives earnest of the zealous interposition of his further aid, should it be required.

I have the honor to remain, with great respect,

Your obedient servant,

RICHARD RUSH.

To the Hon. JOHN FORSYTH,

Secretary of State.

SMITHSONIAN BEQUEST.

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES,

TRANSMITTING

Reports from the Secretary of State and the Secretary of the Treasury upon the subject of the Smithsonian Bequest, in reply to a resolution of the House of Representatives of the 9th of July last.

DECEMBER 10, 1838.

Read, and referred to a Select Committee.

To the House of Representatives of the United States :

I herewith transmit to the House of Representatives reports from the Secretary of State and the Secretary of the Treasury, with accompanying documents, in answer to the resolution of the House of the 9th of July last.

M. VAN BUREN.

WASHINGTON, *Decembér* 7, 1838.

DEPARTMENT OF STATE,

Washington, December 6, 1838.

The Secretary of State, to whom has been referred a resolution of the House of Representatives of the 9th July last, requesting the President to cause to be laid before the House, during the first week of the present session of Congress, "all such communications, papers, documents, &c., now in the possession of the Executive, or which can be obtained, as shall elucidate the origin and objects of the Smithsonian bequest, and the origin, progress, and consummation of the process by which that bequest has been recovered, and whatever may be connected with the subject," has the honor to lay before the President copies of all the papers relating to it now on the files of this Department, and not before communicated.

Respectfully submitted.

JOHN FORSYTH.

To the PRESIDENT of the United States.

No. 20.

LONDON, *January 30, 1838.*

SIR: I had yesterday the honor to receive your letter of the 27th of December, enclosing the President's renewal of my power to prosecute the Smithsonian claim, and receive the money for the United States whenever the same may be adjudged. It remains uncertain, as intimated in my communication of the 27th of October, whether the exhibition of the new power will be eventually demanded: but even if not, I trust the President will think it has been erring on the safe side, after what passed, to have it in my possession.

After my letter of the 16th of December, I had fully hoped that the evidence of which it makes mention would have been obtained from France before this time; but it seems that the French attorneys, who were written to upon the subject by our solicitors, mistook some of their instructions at first, which led to delay. They are now in expectation of receiving it daily.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

No. 21.

LONDON, *February 12, 1838.*

SIR: The day after my last number was sent off, I received information from the solicitors that some of the evidence expected from France had arrived, but that it was not of validity to repel the claim of Madame de la Batut. From as much, however, as it disclosed, they pronounced a strong opinion, that if a formal commission issued from the court, evidence might finally be had that would defeat it.

On fully weighing what they said, I wrote them a note on the 3d instant, requesting answers to the following inquiries:

1. What would be the probable expense of a commission?
2. How much time would be required for its execution and return?
3. Supposing the evidence obtained under it to be sufficient in their opinion, our counsel's, and my own, to defeat the claim: yet, as the legal advisers of Madame de la Batut might not take the same view of it, and thence contest it, what further delays might such a turn in the case become the means of producing? (I enclose a copy of my note.)

I received an answer from them dated the 8th, a copy of which is also enclosed.

Referring specifically to my inquiries, it will be seen—

1. That they estimate the expense of a commission at one hundred and fifty pounds.
2. That they think it might be executed and returned within three months.
3. That, assuming the requisite evidence to be obtained, they incline to think the suit might be wound up before the rising of the court for the long vacation, (which means in August next;) but after the introductory observations of their note, which advert to the uncertainty of all previous calculations as to the duration of suits in chancery, they leave me to judge how far this opinion of theirs is to be relied upon; and they conclude

with an intimation that the case might, in the end, be taken before the House of Lords on appeal; in which event the delay, they add, would be "very great."

I have determined, under these circumstances, not to seek further evidence by a commission to France or otherwise for defeating the claim, and accordingly wrote to them, on the 9th instant, to proceed with all expedition in bringing the suit to a close without it. A copy of this note is also enclosed. As to bringing interrogatories into the master's office for the personal examination of Madame de la Batut and her husband, as adverted to in the answer from the solicitors, I say nothing of the objections to that mode of getting at more evidence, the solicitors themselves forestalling me by an admission that they could not be certain of its success.

I hope that the determination to which I have come will be approved as judicious. This claim has been already, by full scrutiny and resistance, greatly cut down from its original injustice and extravagance, as a reference to my No. 12, of the 24th of last June, will show. That it might be wholly defeated by going on to pursue measures within our power, I incline to believe. The solicitors tell me that they think so decidedly, and their letter is to the same effect. But it is now necessary to balance the advantage to be gained by doing so against the time and money it would cost. The report in favor of the claimant, as the master has determined to make it in the state of the evidence as now before him, will not, by the information I have received and heretofore communicated, be likely to exceed one hundred and fifty pounds a year, payable during her life; to which will have to be added a few years of arrears, calculated on the basis of whatever may be the precise amount of the annuity allowed. The claimant, as far as I can learn, is about sixty years old. Hence, supposing that measures necessary for the total defeat of her claim occupied only another twelvemonth, it seems probable that the very cost of the agency for going on with them, added to all unforeseen legal fees and expenses, might prove more than the annuity is worth. That the suit would be lengthened out another twelvemonth by going into the measures in question, can scarcely, I think, be deemed a strained inference, from all that the solicitors say in their letter, not to dwell upon contingencies coming within its scope that might make the time longer. Should the suit reach the House of Lords, for example, by appeal, it would not be easy to assign a limit to its duration.

I trust, therefore, it will be thought that I exercise a proper discretion, as representing the interests of the United States, in determining not to expose myself to any of these hazards, and new ones that might even chance to spring out of them as time was opened for their operation. It seems to me, conclusively, that I should henceforth rather strive to obtain a decision of their suit as speedily as possible, regardless of the small and temporary diminution of the fund, should it be finally adjudged in their favor, which the foregoing payments to Madame de la Batut would occasion. Opposition has been effectively made to the claim up to the point, it is believed, that duty enjoined and prudence would sanction; to go farther seems not reconcilable with the latter, under the certain and contingent delays and dangers I set forth.

The occasion may be a fit one for remarking, that when this claim first assumed a vexatious aspect last summer, my immediate wish and suggestions were to get a decree in favor of the United States for the general

fund, leaving such fractional portion of it *sub judice* as would have been sufficient to satisfy the claim if established; thus cutting short delay from this source, by which this agency might have had the chance to be closed the sooner, and the bulk of the fund secured to the United States at the earliest possible day. The last I hold an object of pressing importance, encompassed, as all law-suits more or less are, (to say nothing of the peculiar nature of this,) by hidden risks. But it was part of the vexation of the claim that our legal advisers found the course I desired to pursue impracticable, for the reason mentioned in the letter of the solicitors of the 22d of July, a copy of which was forwarded with my No. 15 on the 19th of August.

Now that this obstruction is removed from my path by the determination I have taken in regard to it, I indulge the hope that no new one will be thrown across it; and can only repeat the assurance, that nothing within my power shall be left undone towards accelerating the suit, anxiously desiring, on all public and personal accounts, (if I may speak in the latter sense,) to see it terminated.

In the continued hope that the decision, when it comes, may be favorable, I have the honor to remain, with great respect, your obedient servant,

RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

[With Mr. Rush's No. 21.]

FEBRUARY 3, 1838.

GENTLEMEN: I understood, when with you on Wednesday, that the evidence obtained from France would not, in your opinion, be found sufficient to prevent the master's report embracing an allowance in Madame de la Batut's favor of about one hundred and fifty pounds a year during her life, with some arrearages calculated on that basis; and the evidence, as you exhibited and otherwise made it known to me, certainly led my mind to the same conclusion.

You added that, by sending out a commission from the court of chancery to Paris, (a process not yet resorted to,) you thought that evidence might still be obtained to defeat her claim; on which subject I should be glad to receive answers to the following inquiries, as far as in your power to give them to me:

- 1st. What would be the probable expense of that process?
- 2d. How long before its full execution and return might be expected?
- 3d. Assuming that the evidence, when so obtained, struck your minds, our counsel's, and my own, as sufficient to defeat the claim; yet as it might not happen that the legal advisers of Madame de la Batut would take the same view of it, and thence contest its validity before the court, what further delays might such a turn in the case be likely, under all the circumstances, to lead to?

As I have so repeatedly made known to you my desire for the speediest decision of the case that may be practicable consistently with justice to the United States, I make no apology for asking a reply to these inquiries at as early a day as may be convenient.

I remain your obedient servant,

RICHARD RUSH.

To MESSRS. CLARKE, FYNMORE, & FLADGATE.

[With Mr. Rush's No. 21.]

43 CRAVEN-STREET, STRAND,

February 8, 1838.

DEAR SIR: We have to acknowledge the receipt of your favor of the 3d instant, containing certain queries touching the measures which may be adopted in respect of the claim of Madame de la Batut.

In reply, we beg to state that, so long as proceedings in the English court of chancery are conducted as amicable suits, when both parties unite in a wish to obtain the direction of the court, without unnecessary delay, it is a matter of no great difficulty to calculate their probable duration; but circumstances sometimes arise, even in such suits, that prove the calculations fallacious. When once, however, a suit ceases to be so conducted, and parties come in whose interest it is to throw impediments in the way of a decision, any calculation as to either delay or expense must be a matter of little better than guess. So many unforeseen points may arise, and the practice of the courts affords such facilities for a hostile party to obstruct the course of justice, that the most experienced lawyers hesitate before they attempt to give an opinion upon the subject. If in the present case Madame de la Batut's claim be further resisted, the suit will become one to which these observations apply; or Madame de la Batut might perhaps abandon the claim now brought in, and try to impede us by filing an original bill for its establishment. We do not think this likely, but it is not impossible.

Having said thus much, we will proceed to answer the queries.

We think that within three months evidence might be obtained of the facts necessary to defeat Madame de la Batut's claim, and that such evidence might be procured either by sending over a commission to Paris for the examination of witnesses, or by bringing interrogatories into the master's office for the personal examination of Madame de la Batut and her husband. We now know so much of the case that Madame de la Batut would hardly venture to deny any of the necessary facts; but this is not quite certain.

We think that the expense of a commission to examine witnesses would not exceed £150. The expense of interrogatories for the examination of Madame de la Batut would be trifling: probably thirty or forty pounds.

Assuming that the requisite evidence were obtained, we are inclined to think that, notwithstanding Madame de la Batut's resistance, the suit might be wound up before the rising of the court for the long vacation; but, after the observations we have thought it our duty to make in the early part of this letter, you will be able to judge how far this opinion can be relied on.

You will bear in mind that the decision of the master is not final. Exceptions may be taken to his report, and argued before the court; and even an appeal may be brought against the decision of the vice-chancellor, or master of the rolls, and the cause might be taken to the House of Lords. The delay under such circumstances would be very great.

We are your very faithful and obedient servants,

CLARKE, FYNMORE, & FLADGATE.

RICHARD RUSH, Esq.

[With Mr. Rush's No. 21.]

FEBRUARY 9, 1838.

GENTLEMEN: Your communication of yesterday's date was received, and is satisfactory by its fulness and candor.

Under its representations, I determine not to seek further evidence, by a commission to Paris or otherwise, for the purpose of further reducing the claim of Madame de la Batut.

Let the master's report in this respect be, therefore, made in the state I understood it to have been settled by him; and, now that I take this determination, I trust that it will be made at a very early day.

I need scarcely reiterate to you my most earnest wishes for a speedy decision of the case, or my instructions that you will urge it on with all the expedition in your power.

In the hope that the decision will be in all things favorable, as well as speedy, I remain your faithful and obedient servant,

RICHARD RUSH.

To Messrs. CLARKE, FYNMORE, and FLADGATE.

No. 22.LONDON, *March 28*, 1838.

SIR: Since the date of my last letter, the report of the master has been duly made, and yesterday it was confirmed.

This is a step forward in the case which I am at length happy to announce. It is second in importance only to the decree of the court on the whole merits, and has laid the best foundation for speedily obtaining that decree.

The precise sum that the report allows to Madame la Batut is one hundred and fifty pounds and nine shillings, to be paid to her annually during her life, with a payment of arrears, to be calculated on this basis, from some period in 1834; the exact date of which I have not at this moment, but will mention when I next write.

The court takes a recess next week for the Easter holidays: these will last until the 17th or 20th of April. The case will be set down for another hearing before the court at as early a day as I can command after it reassembles. A decree, I am informed, will be pronounced after this hearing on all the facts as settled by the master—a favorable one, as I hope, for the United States.

By the determination I took respecting the claim of Madame la Batut, as announced in my last, her professional advisers, knowing that she can now get no more than the report allows her, are interested in co-operating with me towards a prompt decision, instead of resorting to adverse proceedings to prolong or thwart it—a course which they have been more or less pursuing hitherto.

On better grounds than ever I think I may, therefore, flatter myself that the case approaches its conclusion; and I will only add that its remaining stages shall be watched by me with a care proportioned to the auspicious results that I believe to be near at hand.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

HON. JOHN FORSYTH,
Secretary of State.

No. 23.

LONDON, *April* 24, 1838.

SIR : The court reassembled last week, since which I have been doing all that is practicable, by personal calls upon the solicitors and otherwise, to urge on the case ; and shall continue this course.

Judging by all they say to me, and my own knowledge of the present situation of the case, I have a confident and, I trust, well-founded belief that May will not elapse without its being brought to a hearing.

Referring to my No. 22, I now beg leave to state that the 22d of September, 1834, is the date from which the annuity allowed by the master's report to Madame la Batut was to commence ; and that the arrears to be paid to her, in the event of a decision in favor of the United States, were to be computed from that time to the 22d of March last. This makes three years and six months, so that the sum due on an annuity of £150 9s. would be £526 11s. 6d.

I have the honor to be, with great respect, your obedient servant,
RICHARD RUSH.

HON. JOHN FORSYTH,
Secretary of State.

No. 24.

LONDON, *May* 3, 1838.

SIR: I am glad to say that the confidence expressed in my last that a hearing of the case was near at hand has been justified, even sooner than I expected, for it was heard on the 1st of this month, and I am now to have the honor of reporting to you the nature of the hearing.

Mr. Pemberton, our leading counsel, rose, and after recapitulating the general nature of the case, as formerly heard by the court, proceeded to state that the reference to the master, as ordered by the decree in February, 1837, had duly taken place, and that all the requisite evidence had been obtained in England and from Italy and France, as to the facts on the happening of which the United States were to become entitled to the fund bequeathed by Mr. Smithson for the purpose mentioned in his will. These facts I need not here repeat, being already set forth specially in my No. 9, of the 25th of March, 1837.

Overlooking a volume of matter merely technical in the evidence and report, or now become immaterial to the main points, it will be sufficient to say that it was satisfactorily established by the former that Henry James Hungerford, named in the pleadings, was dead ; that he died at Pisa, in the summer of 1835 ; that he was not married at the time of his death, nor at any time ; and that he died childless. It was not found how old he was at the time of his death ; nor is that material to any of the issues. As to John Fitall, it was found that he died in London, in June, 1834 ; and as to Madame de la Batut, the mother of Henry James Hungerford, the master, on the evidence before him, found her to have a claim on the estate of Mr. Smithson to the amount of one hundred and fifty pounds and nine shillings a year, payable as long as she lives, and for the arrears of this annual allowance from the 22d of September, 1834, to the 22d of last March.

The establishment of all the foregoing facts will be found to meet the

essential inquiries to which the master's attention was directed by the court's first decree, as reported in my No. 9. Mr. Smithson's will having provided, among other things, that on the death of his nephew, Henry James Hungerford, "without leaving child or children," the whole of his property should go to the United States; and this primary fact being now incontestably established in due and legal form under the authority of the court, and all other proof required by the pleadings obtained, Mr. Pemberton asked for a decree declaring the United States entitled to the property. The representative of the attorney general, who was present in court, said that he believed every thing had been established, as stated, and that the rules relating to public charities, as applicable to this case, calling for no objection on the part of the Crown, none would be interposed—a course that falls in with what was said by the same officer on the occasion of the first decree, as reported in my No. 7.

The counsel of the defendants, Messieurs Drummond, agreed also to what was stated, and had nothing to allege in opposition to the claim of the United States.

The counsel of Madame la Batut were also content; the course I took, as made known in my No. 21, having put an end to opposition from that quarter.

All essential facts being at length fully and formally established, and opposition from all quarters quieted by the measures I have directed, there seemed no reason why a decree in favor of the United States should not at once be pronounced; but Mr. Pemberton having stated that, in the end, a petition would have to be presented for a transfer of the fund to me, as representing the United States, the master of the rolls said that he would pause upon his final decision until that petition was presented.

It is thus that the case now stands. It will come on again one day next week, and I have every ground for believing that my next communication will inform you of a decree having passed declaring the United States entitled to the fund.

Should the forms of chancery require any authentication of my power to receive the fund that Mr. Stevenson can give, he will be ready, at any moment, to give it, as he has assured me; and should his important aid be otherwise needed in any way before the suit is closed, I shall not scruple to call upon him, knowing how zealously he would afford it.

I have the honor to remain, with great respect, your obedient servant,

RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

No. 25.

LONDON, May 12, 1838.

SIR: I have great satisfaction in announcing to you, for the President's information, that the case came on to be heard again on the 9th instant, when a decree was solemnly pronounced, adjudging the Smithsonian bequest to the United States.

Both my powers had been previously lodged with the court—not one only, as stated in newspaper reports of the case; and no question was raised as to my full authority to receive the money on behalf of the United States, without calling for any further authentication of my powers.

The suit is therefore ended without fear of more delays; nothing but a

few forms remaining to put me in actual possession of the fund. These I have the hope may be completed within the present month.

The fund is invested in the stocks of this country, of which I shall, in due time, have an exact account. The largest portion is in the three per cent. annuities. The entire aggregate amounts to fully one hundred thousand pounds; and this, according to my present information, exclusive of about five thousand pounds to be reserved by the court to meet the annual charge in favor of Madame la Batut during her life; the sum producing it to revert to the United States when she dies.

As soon as the decree is formally made up, the accountant general of the court will transfer all the stock to me, under its sanction, except the small sum to be reserved as above.

Having no special instructions as to what I am to do with it, my present intention is to sell the whole, at the best time and for the best prices to be commanded, and bring it over in gold for delivery to the Treasurer of the United States, in fulfilment of the trust with which I am charged. But I will reflect further upon the mode of bringing it home, and adopt that which, under all circumstances, may seem best.

The result I announce will, I trust, justify, in the President's eyes, the determination I took to let the allowance made to Madame la Batut by the master's report stand, without attempting to upset it, whatever might have been the prospect or assurance of ultimate success. The longer the suit lasted, the greater were the risks to which it was exposed. A large sum of money, the whole mentioned above, was to go out of the kingdom, unless an heir could be found to a wandering young Englishman, who had died in Italy at eight or nine and twenty,* and whose mother, never lawfully married, still lives in France. Here was basis enough for the artful and dishonest to fabricate stories of heirship, on allegations of this young Englishman having been married. That fact assumed, the main stumbling-block to their devices would have disappeared. Fabrications to this effect might have been made to wear the semblance of truth by offers in the market of perjury of Italy, France, and England—incidents like these being familiar to history, whether we take public annals, or those of families; and although the combinations, however craftily set on foot, might have been defeated in the end, it is easy to perceive that time and expense would have been required to defeat them. The possibility of their being formed (never to be regarded as very remote while the suit remained open) made it my first anxiety, as it was always my first duty, to have it decided as soon as possible, and to take care even that it moved on during its pendency with no more of publicity to its peculiar circumstances than could be avoided. I trust that both these feelings have been discernible in the general current of my letters to you, reporting all the steps I have taken in it from my first arrival.

Need I add, as a further incentive to despatch, had further been wanting, that events bearing unfavorably upon the public affairs of this country, above all upon the harmony or stability of its foreign relations, would not have failed to operate inauspiciously upon the suit, if in nothing else, by causing stocks to fall. They did begin to fall on the first news of the rebellion in Canada, not recovering until the accounts of its suppression arrived. The case is now beyond the reach of accident, whether

* Believed to be the age of Henry James Hungerford, though not found in the master's report.

from political causes, or others inherent in its nature; and that its final decision thus early has been brought about by the course adopted in February, I am no longer permitted to doubt. *Early* may at first seem a word little applicable, after one entire year and the best part of a second have been devoted to getting the decision; but when the proverbial delays of chancery are considered, (and they could hardly have become a proverb without some foundation,) it may not, perhaps, be thought wholly out of place. Although neither the counsel nor solicitors gave their previous advice to the course, it being a point of conduct for my decision rather than of law for theirs, it is yet satisfactory to be able to state that they approved it afterwards. They regarded it as best consulting the interests of the United States, on every broad view of a case where a great moral object, higher than the pecuniary one, was at stake, enhancing the motives for rescuing it, at the earliest fit moment, from all the unavoidable risks and uncertainties of the future. A fortnight has not elapsed since it was said in the House of Commons by an able member that "a chancery suit was a thing that might begin with a man's life and its termination be his epitaph."

On the whole, I ask leave to congratulate the President and yourself on the result. A suit of higher interest and dignity has rarely, perhaps, been before the tribunals of a nation. If the trust created by the testator's will be successfully carried into effect by the enlightened legislation of Congress, benefits may flow to the United States and to the human family not easy to be estimated, because operating silently and gradually throughout time, yet operating not the less effectually. Not to speak of the inappreciable value of letters to individual and social man, the monuments which they raise to a nation's glory often last when others perish, and seem especially appropriate to the glory of a republic whose foundations are laid in the presumed intelligence of its citizens, and can only be strengthened and perpetuated as that improves. May I also claim to share in the pleasure that attends on relieved anxiety now that the suit is ended?

I have made inquiries from time to time, in the hope of finding out something of the man, personally a stranger to our people, who has sought to benefit distant ages by founding, in the capital of the American Union, an institution (to describe it in his own simple and comprehensive language) FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE AMONG MEN. I have not heard a great deal. What I have heard and may confide in amounts to this: That he was, in fact, the natural son of the Duke of Northumberland; that his mother was a Mrs. Macie, of an ancient family in Wiltshire of the name of Hungerford; that he was educated at Oxford, where he took an honorary degree in 1786; that he went under the name of James Lewis Macie until a few years after he had left the university, when he took that of Smithson, ever after signing only James Smithson, as in his will; that he does not appear to have had any fixed home, living in lodgings when in London, and occasionally staying a year or two at a time in cities on the continent, as Paris, Berlin, Florence, Genoa, at which last he died; and that the ample provision made for him by the Duke of Northumberland, with retired and simple habits, enabled him to accumulate the fortune which now passes to the United States. I have inquired if his political opinions or bias were supposed to be of a nature that led him to select the United States as the great trustee of his enlarged and philanthropic views. The reply has been, that his

opinions, as far as known or inferred, were thought to favor monarchical rather than popular institutions; but that he interested himself little in questions of government, being devoted to science, and chiefly chemistry; that this had introduced him to the society of Cavendish, Wollaston, and others advantageously known to the Royal Society in London, of which body he was a member, and to the archives of which he made contributions; and that he also became acquainted, through his visits to the continent, with eminent chemists in France, Italy, and Germany. Finally, that he was a gentleman of feeble health, but always of courteous though reserved manners and conversation.

Such I learn to have been some of the characteristics of the man whom generations to come may see cause to bless, and whose will may enrol his name with the benefactors of mankind.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

No. 26.

LONDON, *June 5, 1838.*

SIR: With all my exertions to have the forms necessary for putting me in possession of the Smithsonian fund completed in May, it will be seen, from the enclosed copy of a letter to me from the solicitors, in reply to one I wrote them on the last of May, (a copy of which is also enclosed,) that it is only to-day that all the forms have been finally and fully completed.

After getting this information, I went immediately to the proper department of the accountant general of the court of chancery at the Bank of England, and find that there has been transferred to me the following stock, viz:

1. Sixty-four thousand five hundred and thirty-five pounds eighteen shillings and nine pence in the consolidated three per cent. annuities, commonly called consols by abbreviation.

2. Twelve thousand pounds in reduced three per cent. annuities.

3. Sixteen thousand one hundred pounds in bank stock.

The books at the bank show the above stock to have been regularly transferred to me under the authority of the court of chancery, by the accountant general, as the proper officer of the court, in virtue of the decree reported in my last; and I have accepted the same on the books, on behalf of the United States, by signing my name to a form of acceptance drawn out under each transfer.

The above stock constitutes, with the exception of five thousand and fifteen pounds, the whole property left by Mr. Smithson to the United States, and now recovered for them, with the further exception of some small sum in cash, to which the solicitors refer as still to come from the accountant general, but of which I have as yet no statement.

The sum of five thousand and fifteen pounds in consols, it has been decreed by the court is to be reserved and set apart to answer the annuity payable to Madame la Batut; the principal to revert to the United States on the death of the annuitant.

I have taken care to instruct the solicitors to see that there is due proof at all times of the annuitant being in full life as the half-yearly payments are made to her.

Although the aggregate of the stock transferred as above is under one hundred thousand pounds in its nominal amount, there is no doubt whatever but that the sale of it will yield more than that sum.

The transfer by the accountant general was made to me only to-day; and this is so far fortunate as that it could not otherwise have been effected as to the principal part of the stock (viz: the three per cent. annuities) until the 17th of July, the books closing after to-day for the transfer of this species of stock until the date I mention.

The important operation of selling the stock now remains to be conducted, and shall claim my careful attention. I design to go into the city to-morrow, with a view to adopting the earliest measures for this purpose; taking advice, in aid of my own judgment, for so managing the sales as best to promote the interests of the United States.

I continue to think that the best mode of bringing home the money will be in gold, in English sovereigns. Exchange is low, and so will insurance be at this season; and on all accounts it seems to me the preferable mode in which to realize the fund, and deliver it over to the Treasurer of the United States on my arrival, in final discharge of the trust confided to me.

I shall hope to make some report of my steps by the next packet; and in the mean time have the honor to remain, with great respect, your obedient servant,

RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

[With Mr. Rush's No. 26.]

MAY 31, 1838.

GENTLEMEN: I need scarcely again make known to you what I have so frequently urged in person since the decision on the 9th instant, viz: my anxiety to have the necessary document from the proper office of the court, by which the Smithsonian fund adjudged to the United States may be placed at my disposal. But, whatever the past obstacles which you may not have been able to prevent, I must ask the favor of your renewed and best exertions for causing me to be put in possession of it at the earliest possible day; the more so, as we are now at the end of the month, and my being invested with the requisite authority is an indispensable preliminary to arrangements for selling the stock advantageously in June, prior to my embarkation with the fund for the United States. Your past attention to the case is a pledge to me that you will do all in your power to fulfil my wishes; in which assurance I remain,

Your obedient servant,

RICHARD RUSH.

To MESSRS. CLARKE, FYNMORE, & FLADGATE.

[With Mr. Rush's No. 26.]

43 CRAVEN STREET, STRAND, *June 5, 1838.*

DEAR SIR: We beg to assure you, in answer to your favor of the 31st of May, that our endeavors to get through the forms necessary for winding up the suit, and putting you into possession of the Smithsonian fund, have not been less urgent and unremitting than have been your applications to ourselves upon the subject. The circumstance of the shutting of the offices of the court of chancery for the holidays, at a period when they are ordinarily open, and some other petty difficulties not within our control, have, however, prevented our getting through all the forms in the month of May, as we hoped to have been able to do.

We have now, however, the satisfaction to announce to you that every thing is complete, and that the accountant general of the court of chancery has transferred into your name the several sums following:

£64,535 18 9 consols,
12,000 0 0 reduced annuities,
16,100 0 0 bank stock.

These sums are entirely at your disposal, free from the control of the court of chancery.

There will be, in addition, a small cash balance, which, in the course of a few days, you will be able to receive of the accountant general.

We are, very faithfully, your obedient servants,

CLARKE, FYNMORE, & FLADGATE.

RICHARD RUSH, Esq.

No. 27.

LONDON, *June 13, 1838.*

SIR: I am glad to be able to report to you that the sales of the stock are going on well.

The whole of the consols have been sold, and part of the bank stock.

A portion of the consols, viz: £4,535 18s. 9d. was sold on the 6th instant for cash, at 94½. This was considered a high price; more could not have been obtained for cash.

My first desire was to sell all the stock for cash, and immediately, that I might the sooner close the whole operation and get away; but such a course I soon found, on the best information and advice, would have been injudicious.

To have attempted a sale of the bank stock, for example, all at once, would probably have depressed the market for this particular species of security, and occasioned a loss of several hundred pounds. The reason is, that the dealings in it, contradistinguished from those in the great national stocks, are limited, and confined to a very few persons on the stock exchange. The course which prudence dictated was, to sell it out in small parcels, under careful instructions to the broker on each day of sale.

As it thus became necessary, in order to guard against loss, that I should allow myself some little latitude as to time in selling the bank stock, it opened a door the more properly for disposing of the other stock on time, at a short interval; the more especially if by that mode it could be made to produce a larger sum.

Accordingly, on the same day that I disposed of a portion of the consols for cash, which served also as a feeler to ascertain the cash price, I caused the whole of what remained of this stock, viz: £60,000, to be sold on time for the 6th July, that being the day after dividend day, which falls on the 5th of July.

It gives me great satisfaction to state that this sale was effected at 95½.

Up to the day when it was effected, consols had not brought so high a price, as far as I have yet been able to examine the London Mercantile Price Current, for nearly eight years before.

Two sales have been made of the bank stock, viz: one of £3,000, the other of £5,000; the former at 204½, the latter at 201¼; both sales being for the 30th instant, the money payable and stock to be delivered on that day. Should the remainder be sold at these rates, or near them, it will be seen that the bank stock, though in nominal amount only £16,100, as stated in my last, will yield upwards of £30,000.

In the important operations of selling the stock, I am receiving the most beneficial aid from the constant advice and active daily co-operation in all ways of our consul, Colonel Aspinwall, whose long residence in London and ample opportunities of knowing the mysteries of its great stock market, and the minute details of doing business in it, have given him the ability to aid me. It is thus that I am selling to every advantage.

None of the three per cent. reduced annuities have yet been sold. We are watching the market with a view to the most favorable moment for disposing of this part of the stock.

The fortunate point of time was hit for selling out the consols. They have now sunk a little, and, with the exception of momentary intervals, would not have brought as much since the 6th instant as I obtained.

From the sales made, it is now I think certain that the whole stock will yield from one hundred and three to one hundred and five thousand pounds, apart from the five thousand and fifteen to be retained here during the life of Madame la Batut.

From the successful manner in which they are proceeding, it seems clear also, at the present time, that the fund, independent of the accumulations of interest, will be richer in the state in which I shall deliver it over to the United States, than it was in the summer of 1835, when their right to it first attached by the death of Henry James Hungerford.

Left to myself to make the most of the fund after recovering it from chancery, which depended so much on the sale of the stock, it has not been without full consideration that I did not call on the Messrs. Rothschild to sell it all, for which their experience and situation here, besides being the bankers of the United States, might have seemed to point them out. But, first, they would, I take for granted, have charged a commission of one per cent., to which I could not have objected, as it is allowed here, apart from the broker's commission, and by the chamber of commerce at New York on effecting sales of stock; whilst Colonel Aspinwall charges me no such commission, and I much desired to save the amount of it to the fund, if, with his efficient aid, I could conduct the sales confidently and advantageously myself. But, secondly, if the former, as the bankers of the United States, would have performed the task without charge, I should not have been the less disinclined to place it in their hands, having had no instructions to do so, and, being without these, I could only exercise my best discretion. They are, as I in common with others here sup-

pose, very large dealers in stock on their own account, as occasion may serve; and hence may naturally be supposed to desire sometimes a rise, sometimes a fall, in these ever-fluctuating things. With more than a hundred thousand pounds to throw upon the market, I therefore thought it best, acting on a general rule of prudence in all business, to keep the operation of selling entirely clear of every quarter where any insensible bias might, by possibility even, exist to a course other than that which would regard alone the Smithsonian fund.

I design to leave no sale outstanding after the 6th of July. The subsequent steps, however, for obtaining the gold, and those necessary in various ways for shipping it, will render it impracticable for me to embark with it in the packet which sails from Portsmouth on the 10th of July, that packet leaving London always on the 7th. But I will follow in the succeeding one of the 20th of July, which leaves this port on the 17th, before which time I trust that every thing will have been fully and satisfactorily closed, as far as the trust can be closed here.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

No. 28.

LONDON, June 26, 1838.

SIR: Since my No. 27, the sales of the stock have been going on from time to time, and at length are finally closed.

They have all been good—perhaps I may say fortunate. The prices have been high, as compared with the state of the stock market for several years past; and I am confidently informed that, from the time the stock came under my control until I sold it all, no higher prices were obtained by any private seller than I obtained.

The whole of the reduced three per cent. annuities (£12,000) sold at 94. This description of stock is never as high as consols, but 94 is reputed nearly, if not quite, as good a price, in proportion to its general value in the English stock market, as the 95½ I obtained for the consols.

Of the bank stock unsold at the date of my last, (viz: £8,100,) I obtained 205 for £5,000, and 205¼ for the remaining £3,100. Both these prices, it will be perceived, are higher than the former ones I obtained for this stock.

The entire amount of sales has more than realized the anticipations held out in my No. 27, having yielded an aggregate of rather more than one hundred and five thousand pounds, as will be seen when I come to render a more particular statement. The two days on which I am to make all the transfers are the 30th of this month and 6th of July. The money will all be received simultaneously.

Immediately afterwards I shall take measures for converting the whole into English gold coin, having finally determined that this is the proper mode in which to bring the money to the United States, under the trust I have in hand. It appears to me the right course in itself, independent of any question of exchange, considering the peculiar object and terms of

the law of Congress of the 1st of July, 1836, under which I am acting. But by the rate of exchange, as quoted at New York under the last dates, there would be a gain to the United States, by the best calculations I can now make, (though I am aware how exchange is ever liable to fluctuate,) of upwards of a thousand pounds on bringing over the money in gold rather than remitting it in bills. This would help to cover the commissions on shipping the former, effecting insurance upon it, and paying the premium of insurance, as well as charges for freight and those that have been incurred on selling the stock. All these operations demand mercantile agencies and assistance, to which I am inadequate in my own person, beyond superintending them and seeing that they are rendered justly. I will take care that these expenses are kept within limits as moderate as possible, consistently with having the business regularly done according to mercantile usage in operations of the same nature, so that the fund, in bearing its own unavoidable expenses, may be encroached upon as little as possible.

I have not yet been able to get from the solicitors a statement of the costs of the suit, but will not fail to obtain it before I embark. The final payments under this head, and those I shall be called upon to make for services enumerated above, can scarcely be completed but at the last moments of my stay; hence I may not be able to transmit an account of them to you until I arrive at New York, where also the freight will have to be paid.

In reporting to you the final decision of the court, I omitted to mention some particulars not at first accurately known to me, but necessary to be now stated, viz: £526 11s. 6d. were decreed to be paid out of the fund to Madame la Batut, as her arrears; £25 as arrears found to be due to John Fitall, the annuitant under the will; and, lastly, £53 7s. 6d. as due for the use of certain warehouse-rooms in London. The two first items explain themselves, after all I have written. The third has reference to some personal property left by the testator, contained, as I understand, in thirteen boxes or trunks deposited in the warehouse-rooms specified. I have had no opportunity as yet of examining the contents of these boxes, but am informed that they consist chiefly of books unbound, manuscripts, specimens of minerals, some philosophical or chemical instruments, and a few articles of table furniture. The contents of the whole are supposed to be of little intrinsic value, though parts may be otherwise curious. As all now belong to the United States, under the decree of the court, I shall think it proper to have them shipped when the gold is shipped, paying all reasonable charges.

Having more than once spoken of the possibility of fictitious claimants starting up for the Smithsonian bequest, perhaps I may here be allowed to mention what the solicitors have informed me of, viz: that, since the decision, two claimants have presented themselves at their office, neither having any connexion with the other. When the decision was pronounced, the sum recovered was also proclaimed in the London newspapers, which had probably awakened these claimants into life. The solicitors add that one of them desired, somewhat importunately, to know if the case could not be reheard in court? It is needless to remark that he was told he was a little too late in his application.

I will use this opportunity—the last I may perhaps have of writing to you before I embark, from the engagements likely to press upon me in

getting the fund ready for shipment and clearing off all necessary expenses—to say a word of our professional advisers. Of the counsel I selected it is unnecessary for me to speak; their established reputation in the highest department of their profession putting them above any testimonial from me. But of the solicitors, as they move in one of its less conspicuous fields, I will barely take the liberty of saying that more attention, diligence, discretion, and integrity could not, I believe, have been exerted by any persons than they have shown throughout the whole suit, from first to last. Could they ever have forgotten what was due to the United States and to themselves, in the desire to eke out a job, nothing is plainer to me, from what has been passing under my observation of the entanglements and delays natural to a heavy suit in the English court of chancery, than that they might have found opportunities in abundance of making this suit last for years yet to come.

I have the honor to remain, with great respect, your obedient servant,
 RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

No. 29.

LONDON, *July 14, 1838.*

SIR: All the transfers of stock were made on the proper days; all the money was received, and arrangements are now in daily progress for obtaining, insuring, and shipping the gold. It will be on board the New York packet Mediator, Captain Champlin, by or before the 17th instant, in which ship I have taken my passage, intending to embark on that day. The costs of suit have been paid, but the other expenses, arising out of the sale of the stock and shipment of the proceeds, cannot be examined and settled until immediately before I embark, as the whole of the operations cannot be completed until then. It will hence not be in my power to make a statement of all these expenses until I arrive at New York or Washington, when it shall be rendered in a manner that I trust will be satisfactory. I can only repeat that my best exertions have not been spared to keep them all within a compass as moderate as possible.

I received at the Bank of England, day before yesterday, £900, being the interest on £60,000 of consols sold on the 6th of June. It will be remembered (see my No. 27) that this amount of the consols was sold on time, the stock not being deliverable until the 6th of July, which was the day after the dividends for the last six months fell due, by which I became entitled to receive for the United States the above sum of £900.

The boxes and trunks mentioned in my last are to go on shipboard to-day. Before knowing any thing of their contents, I thought proper to have them opened and examined in the presence of our consul and two other persons. A large portion of the contents proved to be unimportant; nevertheless, all will be delivered over on my arrival as I received them, except to have them better packed for a sea voyage, and so as to prevent further injury to that which time and bad packing have already done to them.

I design to leave this letter behind me, to be forwarded by the British

steamer Great Western, which, although not to sail until after the Mediator, may be expected to arrive first at New York. My going in the Great Western has been precluded by the fact of her accommodations for passengers having all been engaged long before I knew the time when I should be able to close the business in my hands, and have the gold ready for shipment.

I have the honor to remain, with great respect, your obedient servant,
 RICHARD RUSH.

Hon. JOHN FORSYTH,
Secretary of State.

No. 30.

HARBOR OF NEW YORK, *August 28, 1838.*

SIR: I have the honor to report to you my arrival here in the ship Mediator, with the amount in gold of the Smithsonian bequest recovered for the United States.

The expenses, of every kind, incurred by closing the business in London and shipping the gold, were paid there; but I have still to pay freight here and primage, and also some other small charges incurred on bringing over the Smithsonian boxes and trunks heretofore mentioned. When every thing is fully paid, there will be left in my hands, as well as I can now compute the amount, upwards of £104,500; the whole is in sovereigns, packed in boxes.

The money being consigned to no one here, I must continue to hold it in my custody until I can receive your instructions to whom to deliver it, as provided for by the act of Congress of the 1st of July, 1836.

I have the honor to remain, in the mean time, your most faithful and obedient servant,

RICHARD RUSH.

Hon. JOHN FORSYTH,
Secretary of State.

DEPARTMENT OF STATE,

Washington, August 30, 1838.

SIR: I have the honor to acknowledge the receipt of your despatch No. 30, of the 28th instant, announcing your arrival in the harbor of New York, with the Smithsonian bequest in gold. With regard to the disposition to be made by you of these funds, you no doubt will have learned, upon landing, that your request had been anticipated by instructions to you from the Treasury Department, intrusted to the care of Mr. George Newbold, president of the Bank of America.

Tendering to you my congratulations on the success of your mission, and on your safe return to your country, I am, sir, respectfully,

Your obedient servant,

JOHN FORSYTH.

RICHARD RUSH, Esq.,
New York.

No. 31.

New York, *August 29, 1838.*

SIR: On landing from the ship yesterday morning, I received the official letter of the Secretary of the Treasury, dated the 20th of July, which had been waiting my arrival here, instructing me to transfer the Smithsonian fund to Philadelphia, to be deposited with the Treasurer of the Mint, to the credit of the Treasurer of the United States, taking duplicate receipts from the former, one of which to be transmitted to the latter.

The ship has not yet got into the dock, but the gold shall be sent on to Philadelphia, as soon as practicable, in the eleven boxes in which it was packed at the Bank of England, according to the instructions I have thus received from the Secretary of the Treasury.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

Hon. JOHN FORSYTH,
Secretary of State.

No. 32.

PHILADELPHIA, *September 4, 1838.*

SIR: I was yesterday honored with your letter of the 30th of August, acknowledging my No. 30 from the harbor of New York, and tender my thanks for your kind congratulations on my return to my own country, and on the success of the public business confided to me. Your letter went on to New York, as directed, but was returned; and I received it at my home, near this city.

My No. 31, written after I had landed, will have informed you that I had then received the instructions of the Secretary of the Treasury to which your letter refers, and I have since been in correspondence with him. Owing to the delay in getting the ship into the dock, I was not able to leave New York with the gold until the 1st of this month, when I arrived with it, accompanied by two agents from the Bank of America, that institution having, at the request of the Secretary of the Treasury, obligingly afforded me every facility in its power towards the business I had in hand. I did not, however, feel at liberty to withdraw my own personal superintendence from the operation of transferring the gold, until I saw it deposited at the Mint. Thither I immediately had it conveyed on reaching this city on the 1st instant, the director and treasurer of the Mint having been in readiness to receive it under the previous information of its intended transfer, which I had requested the bank to transmit. The entire sum contained in the eleven boxes which I delivered to those two officers of the Mint on Saturday, was £104,960 8s. 6d.—the whole in English sovereigns, except the change; and I have now the satisfaction of informing you that official receipts of this amount from my hands have been forwarded to the Treasury Department.

The excess of this sum over that which I had computed in my No. 30 as the probable amount to be left in my hands, arises from the president of the bank having undertaken, at my suggestion, to pay the freight and other shipping-charges due at New York; the bank to be repaid by the

Treasury. The freight was three-eighths of one per cent.—this being the usual charge in the packet-ships—and came to £393 12s. Primage was £19 13s. 8d.; and the charges on bringing over the Smithsonian boxes (left in the custody of the collector, from whom I had every facility on landing) were to have been £3 8s. 5d., or thereabouts.*

It seemed to me that it would be best for the bank to pay all these charges, as the most convenient mode of settling without delay with the ship-owners, to whom I had become responsible by my engagements with the captain in London; and I have the hope that this course will meet the approbation of the Secretary of the Treasury and yourself. It left the gold, as secured in boxes at the Bank of England, untouched at New York; and I had caused the seal of our consul at London to be affixed to each of them.

Somewhat worn down by fatigue since coming on shore, after an uncomfortable voyage of squalls, gales, and head-winds, I venture to ask a little repose at my home before proceeding to Washington, for the purpose of making out and rendering to you an account of all expenses that have attended the final recovery of this fund, of which the United States, by the information I give you in this letter, are now in possession. In the course of the next week I shall hope to proceed to Washington, with the view stated; and in order that, my account of the expenses being found satisfactory, which I presume to hope will be the case, I may ask to be discharged from all further responsibility under the trust I have been performing. The nett amount, in dollars, of the fund as I delivered it over to the United States at the Mint, was found to be five hundred and eight thousand three hundred and eighteen dollars forty-six cents, (\$508,318.46,) as specified in the receipt given to me for it by the treasurer of the Mint.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

The Hon. JOHN FORSYTH,
Secretary of State.

No. 33.

PHILADELPHIA, *September 11, 1838.*

SIR: I yesterday received a letter from the Secretary of the Treasury, dated the 7th instant, stating it to be desirable that the expenses attending the transfer of the Smithsonian fund to this country, and its deposit at the Mint, should be ascertained as early as practicable, that the accounts in relation to it may be adjusted with a view to the investment of the balance, and asking my attention to the subject at my earliest convenience.

In reply, I had the honor to inform the Secretary that I could not make out a statement of the expenses, as far as then incurred, before embarking at London with the gold, the documents relating to them not being obtainable until the last moments of my stay; besides that, the whole operations of selling the stock in the English funds, in which Mr. Smithson's fortune was invested, and afterwards shipping the gold, required and

* There proved to be fourteen of these boxes, the additional one containing a picture, of which I had not heard at the date of my No. 28.

had my constant supervision until I saw the latter finally deposited at our Mint, in fulfilment of his instructions; that, having suffered greatly from sea-sickness during the voyage, added to fatigue after landing in a weak state at New York, where the care of the gold still required my personal superintendence, I had been unable hitherto to prepare a statement of the expenses in question, but that I was now regaining strength and intended to set out for Washington on Saturday, at farthest, if then able, as at present I had reason to hope would be the case. I added, that I supposed a settlement of my account could be effected more satisfactorily and promptly by my presence with the accounting officers at Washington than by any attempt to make it out here, and transmit it by letter, which, it may be, might lead to writing backwards and forwards before a final adjustment took place: of which correspondence I have the honor to inform you, and to remain, with great respect, your obedient servant,

RICHARD RUSH.

Honorable JOHN FORSYTH,
Secretary of State.

DEPARTMENT OF STATE,
Washington, September 18, 1838.

SIR: I have the honor to transmit, herewith, two letters from Mr. Richard Rush, Nos. 34 and 35, with the papers which accompanied them, in relation to the amount recovered of the Smithsonian legacy, and the expenses attending the recovery, and the transmission of the proceeds to this country.

I am, sir, your obedient servant,

JOHN FORSYTH.

Honorable LEVI WOODBURY,
Secretary of the Treasury.

No. 34.

WASHINGTON, *September 15, 1838.*

SIR: I am now to give you a statement of all the expenses that attended the recovery of the Smithsonian bequest for the United States.

It may be in order first to mention the whole amount of stock and money that came into my hands from the court of chancery, or otherwise.

I received of English Government stock £645,535 18s. 9d. in consols, £12,000 in reduced three per cent. annuities, and £16,100 in bank stock of the Bank of England, as heretofore mentioned in my No. 26, and will now be seen by the original order or decree of the court, which I enclose, (marked A.) This document I could not obtain until the 11th of July, when I received it with the letter of the solicitors of that date, also enclosed, (marked B.)

On the 11th of June I received from the accountant general of the court of chancery £725 3s. 7d. This was the sum remaining to be paid to me, after previous payments to others, out of cash in hand appertaining to the Smithsonian fund whilst in the custody of the court, as will be seen

in the concluding part of the decree. That this was the exact residue coming to me, will be further seen by an explanatory letter from the solicitors of the 5th of July, also enclosed, (marked C,) and more authoritatively by a document (marked D) from the books of the accountant general of the court, sent to me by the solicitors, with their letter of the 11th of July. This document, besides verifying in its own forms the amount of stock and money I have otherwise stated myself to have received, also verifies the statements in my Nos. 26 and 28, as to the sums awarded to Madame de la Batut, the arrears to John Fitall, and the money decreed as warehouse-rent for the boxes containing the personal effects of Mr. Smithson, which I brought over and delivered into the custody of the collector at New York. It is a document founded on the decree of the court itself, and shows in more detail how its judgments were fulfilled.

I received on the 12th of July £900 at the Bank of England, being the dividend due on the consols I had sold, as mentioned in my No. 29; and, lastly, I received from the solicitors £116 2s. 2d., being money returned by them out of what I had paid them for costs on the 8th day of April, 1837, viz: £200 4s., as reported in my No. 14. The following is the explanation of this item: When I paid them this sum, I fully expected to pay all further costs out of the same fund, then in my hands, that Congress had appropriated for that purpose; but it appears that, on the termination of the suit in favor of the United States, the costs of all parties were paid out of the corpus of the fund; nor would the court award the fund to the United States, as may be seen by the decree, until all costs were accordingly first taken out of it, which the court judged it proper the fund itself should bear. I knew not of such a rule which the solicitors advert to in their letter of July the 5th, until a short time before the decree was pronounced. The total amount of their costs, as made known to me in the same letter, and set out in detail in a voluminous bill, which I enclose, (marked E,) and to which I caused their affidavits to be annexed, was £490 1s. 10d. The court adjudged £406 3s. of this sum to be paid to them out of the fund, as their taxed costs, which, added to what I had previously paid them, made £606 7s. The difference between this and £490 4s. 10d. being £116 2s. 2d., they refunded the latter sum to me. Their total bill, (considering that it included all fees paid by them under my direction to the counsel, and all costs and charges of every description from the beginning to the end of the suit, with some small extra charges, to which their letter refers, which I also authorized, to ensure a speedy and successful termination of the suit,) and considering the magnitude of the suit, was, in my judgment, and in that of others better informed, to whom I submitted its amount, extremely moderate. I hope it will be thought to show care on my part to keep all those charges low, that often are run up to amounts so enormous in English chancery proceedings; and, let me add, as in justice I am bound to do, to show more strongly that the solicitors I had to deal with were honorable and just men.

I did not consider these refunded costs as belonging to the legacy fund recovered, but I threw them into it when the general gold was obtained, that all might be safely kept together, and come under one insurance.

The gross amount yielded by all the stock I sold, including the £900 I received as the dividend on the consols, was £105,649 6s.

For the prices at which I sold the different parcels and kinds, I beg to refer to my Nos. 27 and 28, which detail the commencement, progress, and conclusion of the sales. This sum, added to the £725 3s. 7d. received from the accountant general of the court of chancery, and the £116 2s. 2d. returned to me by the solicitors, will show that the entire sum that came into my hands was £106,490 11s. 9d.

I am next to inform you of the expenses that attended the sales of the stock, and shipping and bringing over the gold to this country.

After I had finally recovered the legacy from the court of chancery, it did not seem to me prudent that I should, by myself alone, undertake the sales of the stock awarded, and delivered to me by its decree, any more than the shipment of the gold, into which the money was afterwards to be converted; these ulterior operations being usually conducted through mercantile agencies, and being of a nature not to be advantageously, if safely, conducted without them. Feeling inadequate, in my own person merely, to the management of such operations, my first intention was that the sales of the stock, as a highly important part of them, should be put under the direction of some experienced mercantile or banking-house in London, familiar with the modes of doing business on its great stock exchange, and self-confident in the measures to be taken. But I found that to put this operation into such hands would incur a commission of one per cent. on the entire fund, as mentioned in my No. 27, in addition to brokerage and other charges, such as the expenses on transfers and stamps; besides that, I should have had to part with the possession of the stock to such mercantile or banking-house whilst the sales were going on. I was also given to understand that this latter step would probably lay a foundation for a further mercantile commission on receiving and paying.

Weighing all these circumstances, I came to the conclusion to keep the operation of selling the stock in my own hands. Nevertheless, I felt, as already intimated, that I could conduct it with neither skill nor safety unless under the counsel and co-operation of a person well informed in these matters, and trustworthy. To the consul of the United States in London I applied as to such a person, and received from him, as my No. 27 informed you, this aid and co-operation, in the fullest and most efficient manner, daily, throughout the months of June and July, until all the sales were effected; and effected, I may be allowed to add, with favorable results not to have been surpassed, as I have already reported to you, and as the public records of the London stock market on each of the days that I sold will attest. Into his hands I also put the other mercantile business necessary to the shipment of the gold. These included the obtaining, verifying, arranging, packing, and securing it for shipment, contracting for freight, entering and clearing at the custom-house, effecting insurance, (which was done at five principal offices and with thirty-two private underwriters,) and, finally, shipping the gold. For these services, of whatever kind, (and I had many incidental ones from him, not here enumerated,) I allowed and paid him a commission of three-fourths of one per cent., which amounted to £797 15s. 6d.

I speak from good information when expressing a belief that an equal amount of assistance and services to me, under all the heads rendered, could not have been commanded through the usual agency of banking and commercial houses, on so heavy and responsible a moneyed operation,

at a less charge to the fund than a commission of from two to two and a half per cent. on the whole amount of it; and that this falls below rather than goes beyond what it might be expected to have been.

I enclose the consul's account, signed T. Aspinwall, together with his voucher for a charge of £6 19s. 4d. for expenses paid by him on shipping the 14 Smithsonian boxes.

The premium for insurance was one half of one per cent., and amounted, with the expense of stamps and policies, to £599 3s. 4d. The statement of this, as paid for me by the consul, will be seen in the enclosure, (marked "Invoice,") on which are also certain items, as dock charges, charges for bills of lading, and some other things, amounting in all to £6 0s. 6d., accompanied by vouchers. I also enclose the policies of insurance.* The insurance covered all commissions and charges paid in London, so as to have made the United States entirely whole in case of loss. This I directed, thinking it most prudent.

The expenses on selling the stock, viz: brokerage, charges on the transfers, and charges for stamps, were £120 4s. 6d. These will be seen in my account, marked among the enclosures R R.

The several expenses above enumerated, viz:

1st. The consul's commission of £797 15s. 6d., and charges £6 19s. 4d.

2d. The premium of insurance, stamps, and policies, viz: £599 3s. 4d., with the charges £6 0s. 6d.

And 3d. The expense of selling the stock, viz: £120 4s. 6d., deducted from the gross amount of moneys that came into my hands, viz: £106,490 11s. 9d., will leave £104,960 8s. 7d., which was the precise sum in gold I brought over in the eleven boxes, and, under instructions from the Secretary of the Treasury, deposited at the Mint in Philadelphia, on the 1st instant, to the credit of the Treasurer of the United States.

The foregoing is the statement I have to make of the expenses. I presume to hope that they will not be thought objectionable, but, on the contrary, moderate under all the heads. If I have been somewhat minute in explaining them, it is for the better understanding of the different accounts and documents enclosed, trusting that this will be my excuse when about to surrender up a trust where so much pecuniary responsibility has devolved upon me.

In regard to the 14 boxes containing the personal effects of Mr. Smithsonian, it will be perceived that the letter of the solicitors, of the 5th July, mentions that they had sent me a list of them. They did so, and I enclose it, (marked F.) It is proper to remark, that this list refers to but one of the boxes, or rather to a trunk, as their letter specifies, and it proved to be erroneous. I preferred that all these boxes, and the trunk, should be first opened at the consulate, in presence of the consul and others, who might aid me in ascertaining their contents. When the trunk was opened, several of the articles down upon the list were not in it. I mentioned this to the solicitors, and it produced the explanatory letter from them of the 13th of July, which I enclose, (marked G.) All the rest of the boxes were filled with things of little intrinsic value, as far as a mere superficial inspection of them, pressed upon me on the eve of my embarkation, could determine. They seemed to be chiefly old books, pamphlets, manuscripts,

* It has been deemed unnecessary, at the Department of State, to communicate copies of the several policies of insurance above referred to.

and some philosophical or chemical instruments. Of the whole contents, (such as they were,) all were left as we found them, except to have been repacked, with the aid of the consul and his assistants, and put in a better state for crossing the sea than they were when delivered to me. When first opened, it was evident that time, mould, and careless packing in the first instance, had nearly destroyed many of the articles.

The freight payable on the gold was not paid in London, not being due until the arrival of the ship at New York; but the consul agreed with the captain for three-eighths of one per cent., which brought the amount to £393 12s. Primage was £19 13s. 8d.; and the freight and primage on the 14 Smithsonian boxes was to have been £3 8s. 5d. These several charges I was necessarily obliged to assume for the United States, and engaged to pay them when the ship got to New York. On arriving there, I received the instructions of the Secretary of the Treasury, of the 20th of July, directing me to transfer the gold to the Mint at Philadelphia as soon as practicable; it being added that the president of the Bank of America at New York had been requested to render me any facilities in his power. The captain of the ship being content to take the bank as payment for these last-mentioned charges, I thought I should best consult the spirit of the Secretary's instructions by leaving the bank to pay them, which its president expressed an immediate readiness to do. I supposed it could make no difference to the Government, in the end, whilst it saved the necessity of opening one of the boxes of the gold at New York, out of which fund alone I could have made the payment if demanded of me under the engagement I had contracted. The bank may have further charges to make for its aid to me otherwise in removing the gold to the Mint, but I know nothing of them in detail.

Referring, therefore, to that part of the Secretary's letter to me of the 7th instant, which I mentioned in my No. 33, asking a statement of expenses attending the transportation of the gold after its actual shipment at London, and its transfer to the Mint at Philadelphia after its arrival at New York, I beg to offer the above explanation, having paid nothing myself.

I have the honor to remain, with great respect, your obedient servant,
RICHARD RUSH.

HON. JOHN FORSYTH,
Secretary of State.

A.

IN CHANCERY, MAY 12, 1838.

PRESIDENT OF THE UNITED STATES, }
vs. } *Order on further directions.*
 DRUMMOND. }

AT THE ROLLS, — — —, *Master of the Rolls—£3 10s.—76.*

Between the President of the United }
 States of America, *plaintiff*, } *Saturday, the 12th day of May,*
and } *in the first year of the reign of*
 Charles Drummond and her Majes- } *her Majesty Queen Victoria,*
 ty's Attorney General, *defendants.* } 1838.

This cause coming on the 1st day of February, 1837, to be heard and debated before the right honorable the master of the rolls, in the presence of counsel learned on both sides, his lordship did order that the plaintiff's bill should be amended, by stating the act of Congress passed in the year 1836; and the said bill being amended in court accordingly, upon hearing the same act of Congress, and also the power of attorney granted to Richard Rush, Esq., mentioned in the said bill as amended, read, his lordship did order that it should be referred to the master to whom the cause of Hungerford *vs.* Drummond stood transferred, to carry on the account directed by the decree of the 15th day of December, 1829; and it was ordered that the said master should inquire whether John Fitall, in the pleadings of this cause named, was living or dead; and, if the said master should find that the said John Fitall was dead, then it was ordered that he should inquire and state when he died. And it was ordered that the said master should inquire whether Henry James Hungerford, in the pleadings also named, was living or dead; and if the said master should find that the said Henry James Hungerford was dead, then it was ordered that he should inquire and state when he died, and whether he was married or unmarried at the time of his decease; and, if married, whether he left any, and what, children or child him surviving; and the said master was to inquire and state the ages of such children, respectively, if more than one. And it was ordered that the said master should inquire and state to the court whether Madame de la Batut had any claim on the said testator Smithson's estate; and, for the better discovery of the matters aforesaid, the usual directions were given, and his lordship did reserve the consideration of all further directions, and of the costs of this suit, until after the said master should have made his report. That, in pursuance of the said decree, the said master made his report, dated the 23d day of March, 1838, which stands absolutely confirmed by an order dated the 27th day of March, 1838, and thereby certified he found that the sum of £53 7s. 6d. was justly due and owing to Messrs. Thomas Clarke & Co., the solicitors for the defendant Charles Drummond, from the estate of the said testator; and he found that the said John Fitall was dead, and that he died at Bush house, Wanstead, in the county of Essex, on the 14th day of June, 1834; and he found that the said Henry James Hungerford assumed the name of De la Batut, and was known as Baron Eunice de la Batut, and died at the Royal hotel, called the Donzelle, situate at Pisa, on or about the 5th

day of June, 1835, without ever having been married, and without leaving any issue. And the said master certified that he was of opinion and did find that the said Mary Ann de la Batut, in her right, was entitled to a claim on the estate of the said testator, James W. Smithson, for an interest during the life of the said Mary Ann de la Batut, in a moiety of the annual income or sum of 7,673 livres de rentes, in the report mentioned, amounting in value to the annual sum of £150 9s. sterling money of Great Britain and Ireland, calculated at the current rate of exchange in the city of London, on the 8th day of March, 1838; and he found that the income arising from the said French stock or fund, called livres de rentes, was payable and paid half-yearly by the French Government, on or about the 22d day of March and the 22d day of September in each year; and he also found that there was due and owing to the said Mary Ann de la Batut, (or the said Theodore de la Batut, in her right,) from the estate of the said testator, James Smithson, the sum of 13,427 francs 75 centimes, for arrears of the said annuity, from the 22d day of September, 1834, to the 22d day of March, 1838, amounting in value to £526 11s. 6d., sterling money of Great Britain and Ireland, calculated at the current rate of exchange in the said city of London, as aforesaid; and he found that the annual income or annuity to which the said Mary Ann de la Batut (or the said Theodore de la Batut, in her right) was entitled for her life out of the estate of the said testator, James Smithson, amounting to £150 9s. sterling money of Great Britain and Ireland as aforesaid. And whereas the above-named plaintiff and Richard Rush did, on the 3d day of May, 1838, prefer their petition unto the right honorable the master of the rolls, setting forth as therein set forth, and praying that the residue of the several stocks, funds, and securities, and cash, respectively, standing in the name of the accountant general of this court, in trust in the cause of Hungerford *vs.* Drummond, and in trust in this cause, which should remain after providing for and satisfying the annual and other payments directed by the will of the said testator, and the costs and charges to which the estate of the said testator had been rendered liable by virtue of the several proceedings and measures aforesaid, or any of them, might be respectively transferred, (the amount thereof to be verified by affidavit,) in the books of the governor and company of the Bank of England, and paid to the petitioner, Richard Rush; and that the boxes and packages mentioned in the said master's report might be delivered into the custody of the petitioner, Richard Rush. Whereupon all parties concerned were ordered to attend his lordship on the matter of the said petition, when this cause should come on to be heard for further directions; and this cause coming on this present day to be heard before the right honorable the master of the rolls for further directions on the said master's said report, and as to the measure of costs reserved in the said decree, in the presence of counsel learned on both sides: upon opening and debate of the measure, and hearing the said decree, the said report, the said order dated the 27th day of March, the said petition, and the accountant general's certificates read, and what was alleged by the counsel on all sides, his lordship doth declare that the plaintiff is entitled to the residue of the several stocks, and securities, and cash, respectively, standing in the name of the accountant general of this court, in trust in this cause, and also in trust in a certain other cause of Hungerford against Drummond, in the master's report mentioned, and the other property of James Smithson, the testator, in the pleadings in this cause named, after providing for the payment

hereinafter directed ; and it is ordered that the sixty-two thousand seven hundred and thirty-nine pounds nineteen shillings and two pence bank three pounds per cent. annuities, twelve thousand pounds reduced annuities, and sixteen thousand one hundred pounds bank stock, respectively, standing in the name of the said accountant general, in trust in the cause of Hungerford *vs.* Drummond, and the sum of one thousand seven hundred and sixty-five pounds two shillings cash in the bank, remaining on the credit of the said cause, be respectively carried over in trust in and to the credit of this cause ; and the said accountant general is to declare the trust of the said several sums of stock, accordingly, subject to the further order of this court ; and out of the said sum of one thousand seven hundred and seventy-five pounds two shillings cash, when so carried over, and the sum of two hundred and four pounds six shillings and eight pence cash in the bank, on the credit of this cause, it is ordered that the sum of fifty-three pounds seven shillings and six pence be paid to Mr. Thomas George Fynmore ; and thereout, also, it is ordered that the sum of five hundred and twenty-six pounds eleven shillings and six pence be carried over, with the privity of the said accountant general, and placed to the credit of this cause, to an account to be entitled “ The account of the annuitant Mary Ann de la Batut ;” and thereout, also, it is ordered that the sum of twenty-five pounds be paid to Mrs. Elizabeth Fitall, (as executrix of John Fitall, deceased ;) and it is ordered that it be referred to the master to whom this cause stands referred, to tax all parties their costs of this suit, and relating thereto, properly incurred ; the costs of the plaintiff, and of the defendant Charles Drummond, to be taxed as between solicitor and client ; and it is ordered that the amount of such costs, when taxed, be paid out of one thousand three hundred and sixty-four pounds nine shillings and eight pence cash, which will then be remaining on the credit of this cause, after the several before-mentioned payments, in manner following, that is to say : the costs of the said plaintiff to Mr. Thomas Clarke, his solicitor ; and the costs of the defendant Charles Drummond to Mr. Thomas George Fynmore, his solicitor ; and the costs of her Majesty’s attorney general, to Mr. George Maule, her solicitor. It is ordered that five thousand and fifteen pounds bank three pounds per cent. annuities, part of the six thousand eight hundred and ten pounds nineteen shillings and seven pence, like annuities, standing in the name of the said accountant general, in trust in this cause, and any interest which may accrue on the said sum of five thousand and fifteen pounds bank three pounds per cent. annuities, previous to the carrying over hereby directed, be, in like manner, carried over in trust, in this cause, to the separate account of Mary Ann de la Batut, entitled “ The account of the annuitant Mary Ann de la Batut ;” and the said accountant general is to declare the trust thereof accordingly, subject to the further order of this court. And it is ordered that the interest and dividends thereof, which shall accrue during the life of the said Mary Ann de la Batut, be paid to her during her life, or until the further order of this court, for her separate use, and on her sole receipt, by equal half-yearly payments, on the 22d day of September and the 22d day of March in every year ; the first payment thereof to be made on the 22d day of September next. And it is ordered that the said sixty-two thousand seven hundred and thirty-nine pounds nineteen shillings and two pence bank three pounds per cent. annuities, twelve thousand pounds reduced annuities, and sixteen thousand one hundred pounds bank stock,

when so respectively carried over, and one thousand seven hundred and ninety-five pounds nineteen shillings and seven pence three pounds per cent. annuities, residue of the said six thousand eight hundred and ten pounds nineteen shillings and seven pence, like annuities, after such carrying over of part thereof as aforesaid, and the residue of the said sum of one thousand three hundred and sixty-four pounds nine shillings and eight pence cash, after the payments thereout hereinbefore directed, (the amount of such residue to be verified by affidavit,) be transferred and paid to Mr. Richard Rush, in the plaintiff's bill named. And it is ordered that the boxes and packages in the master's report of the twenty-eighth day of June, one thousand eight hundred and thirty-one, in the said cause of *Hungerford vs. Drummond* mentioned, be delivered into the custody of the said Richard Rush, as attorney or otherwise for the plaintiff; and, for the purposes aforesaid, the said accountant general is to draw on the bank, according to the form prescribed by the act of Parliament, and the general rules and orders of this court in that case made and provided; and any of the parties are to be at liberty to apply to this court as they may be advised.

H. H.
Entered: E. R.

B.

CRAVEN STREET, *July 11, 1838.*

DEAR SIR: We have made the affidavit which you required to verify the bill of costs, and which we now return to you.

We also send you the original order on further directions, under which the several transfers of the funds have been made into your name. This order has the initials of the registrar, as also of the entering clerk, placed at the foot of it; this being the mode adopted in the court of chancery to show the authenticity of their orders.

We also send you a transcript from the books of the accountant general, certified by Mr. Lewis to be a true copy—Mr. Lewis being the clerk whose duty it is to make such transcript. The sum of £70 7s. 8d., appearing still to remain on the general credit of the cause, is reserved for the costs of the attorney general, and will be paid over to his solicitor upon his applying for the amount; and the cash standing to the account of Mrs. de la Batut is for the arrears of her annuity, and will be paid to her.

We have seen Mr. Deacon upon the subject of his charge for warehouse-room beyond the 21th ultimo, and have paid him for the same £2; and we have also paid 4s. 6d. for swearing to our bill of costs, which is the whole of our demand against you.

Mr. Deacon informed us when we saw him that he had in his possession a painting belonging to the estate, and which he promised should be sent over to your house, and which we presume he has done; but should he not have done so, perhaps you will be good enough to apply to him for it.

We will thank you to send us an acknowledgment for the different boxes we have handed you.

We are, dear sir, your very faithful servants,

CLARKE, FYNMORE & FLADGATE.

RICHARD RUSH, Esq.

C.

CRAVEN STREET, July 5, 1838.

DEAR SIR: At the time of the decease of the late Henry James Hungerford, Esq., which happened on the 5th June, 1835, there was standing in the name of the accountant general of the court of chancery, to the credit of the cause *Hungerford vs. Drummond*, the several sums following, viz:

£62,739	19s.	2d.	bank £3 per cent. annuities;
12,000	0	0	£3 per cent. reduced annuities;
16,100	0	0	bank stock.

And if these several funds had then been sold, they would have realized the sum of £102,991, or thereabouts; but owing to the proceedings which were necessary to be instituted in the court of chancery, the funds were not transferred into your name until the 5th June, 1838. We are happy to inform you that, notwithstanding this delay, no loss has been occasioned to the United States, as, according to the market prices of the funds on the last-mentioned day, the funds were then worth \$103,888 being an excess of £897 beyond their value on the 5th June, 1835, the date of Mr. Hungerford's death.

The whole of the costs of the chancery suit amounted to £723 7s. 11d., so that the increase in the value of the funds was sufficient to pay the whole of these costs, and leave a surplus of £173 12s. 1d.

In making out the above statement, the dividends upon the funds have not been taken into account, but the United States receive them in addition to the original fund.

The United States do not, however, receive the whole amount of such dividends now, as a portion of them was invested in stock, of which £5,015 has been appropriated to answer an annuity of £150 *vs.* to Madame de la Batut, upon whose decease the same will become the property of the United States.

The sums in court, at the last hearing of the cause, were as follows, viz:

£62,739	19s.	2d.	bank 3 per cent. annuities;
6,810	19	7	like annuities;
12,000	0	0	reduced annuities;
16,100	0	0	bank stock;
1,765	2	0	cash;
204	6	8	cash.

These sums have been appropriated as follows, viz:

£62,739	19s.	2d.	bank £3 per cent. annuities;	} Trans'd into the name of Rd. Rush, Esq.
1,795	19	7	part of £6,810 19s. 7d. like annuities;	
£64,535	18	9	bank 3 per cent. annuities;	}
12,000	0	0	reduced annuities;	
16,100	0	0	bank stock;	
5,015	0	0	reduced bank annuities, residue of £6,810 19s. 7d., retained in court to answer annuity to Madame de la Batut;	
406	3	0	paid to plaintiff's solicitors for their costs;	
162	15	5	paid to defendants' solicitors for costs;	
53	7	6	paid to plaintiff's solicitors for chamber-room, paid by them to Messrs. Deacon	

£526 11s. 6d. paid to Madame de la Batut for arrears of her annuity;
 25 0 0 paid to Mrs. Fitall for arrears of annuity;
 70 7 8 paid to solicitor for defendant the attorney general.
 for costs;
 725 3 7 balance of cash paid to R. Rush, Esq.

Herewith we send you a complete copy of our bill of costs, amounting altogether to £490 4s. 10d.; and we have received the following sums on account of costs, viz:

	£	s.	d.
April 10, 1837, of Richard Rush, Esq.	-	-	-
June 11, 1838, of accountant general, for plaintiff's taxed costs	-	-	-
	200	4	0
	406	3	0
	<hr/>		
	606	7	0
	<hr/>		

The latter sum exceeding our bill of costs by £116 2s. 2d., leaves us in debt to the United States to that amount, for which we beg leave to enclose our check.

We may here remind you of the information on the subject of costs, which we had before given you verbally, viz: that the court allows against the fund certain ordinary costs; and such costs have been received by us from the accountant general, as before stated. In consequence, however, of the line of conduct adopted by us, under your own directions, to ensure a speedy and successful termination of the suit, some small extra costs have been incurred beyond what are considered ordinary costs.

We have, as you requested, had a lock placed upon the trunk* in our possession, having previously deposited therein the several articles of plate and other matters, which we mentioned to you as being in our possession, and of which articles we enclose you a list.

We are, dear sir, your faithful and obedient servants,
 CLARKE, FYNMORE, & FLADGATE.

P. S. We also return to you the memoranda which you left with us as to the stock.

* One of the 14 mentioned in my despatch No. 32.

D.
Transcript of the account in the cause, the President of the United States of America vs. Drummond: from the books of the accountant general.

Dr. *The President of the United States of America vs. Drummond.* Cr.

1838. June 2	To the above cause the account of the annuitant Mary Ann de la Batut, for the bank £3 per cent. annuities: Carried over to that account	£	s.	d.	£	s.	d.	By bank £3 per cent. annuities purchased with cash, from the cause Hungerford vs. Drummond	£	s.	d.	6,810	19	7
June 5	To bank £3 per cent. annuities, transferred to Richard Rush, by order of court dated 12th May, 1838, £62,739 19s. 2d. and £1,795 19s. 7d. -	-	-	-	5,015	0	0	By cash received, six months interest £6,810 19s. 7d. bank £3 per cent. annuities -	102	3	4	-	-	-
	To reduced annuities transferred to Richard Rush -	-	-	-	64,535	18	9	By cash received, six months interest £6,810 19s. 7d. bank £3 per cent. annuities	102	3	4	-	-	-
June 7	To bank stock transferred to Richard Rush -	-	-	-	12,000	0	0	By sundry securities brought over for the cause, Hungerford vs. Drummond, viz: -	-	-	-	62,739	19	2
	To the President of the United States of America vs. Drummond, the account of the annuitant Mary Ann de la Batut for the cash carried over to that account -	-	-	-	16,100	0	0	Bank £3 per cent. annuities	-	-	-	12,000	0	0
	To cash paid Thos. George Fynmore -	526	11	6	-	-	-	Reduced annuities -	-	-	-	16,100	0	0
June 12	To cash paid Thos. Clarke -	53	7	6	-	-	-	Bank stock	-	-	-	-	-	-
	To do. do. Rich'd Rush -	406	3	0	-	-	-	Interest money	1,765	2	0	-	-	-
	To do. do. Thos. George Fynmore, solicitors' costs -	725	3	7	-	-	-							
June 27	To cash paid Mrs. Elizabeth Fittall -	162	15	5	-	-	-							
		25	0	0	-	-	-							

The President of the United States of America vs. Drummond. The account of the annuitant Mary Ann de la Batut.

Dr.

Cr.

1838.		
June 2.	By the President of the United States of America vs. Drummond, for the bank £3 per cent. annuities brought over	£5.015
June 7.	By the said cash for cause, brought over	£526 11 6
July 11.	By cash received, six months interest on £5,015, bank £3 per cent. annuities	75 4 6

I do hereby certify this to be a true copy of the books of the accountant general of the high court of chancery.

BENJ. LEWIS,

Clerk of the above accountant general.

CHANCERY LANE, July, 1838.

E.

IN CHANCERY.

Between the President of the United States of America, *plaintiff*,
and
 Charles Drummond and her Majesty's Attorney General, *defendants*.

The bill of costs of the above-named plaintiff in this suit and incidental thereto.

£ s. d.

Sept. 16, 1836.—Mr. Fladgate's attendance on Mr. Rush, on the part of the United States, at the Portland hotel, by appointment, when Mr. Rush requested that two of the firm should at least attend 6 8

Writing to Mr. Rush, fixing appointment for conference with him on Tuesday, at 11 o'clock 5 0

Sept. 20.—Mr. Clarke and Mr. Fladgate's attendance on Mr. Rush, fully explaining to him the course which it appeared to us should be taken on the part of the executors to bring the claim of the United States under consideration, and also the necessity of making Madame de la Batut and the attorney general parties; and reading to him the case laid before Mr. Stuart, and his opinion, of which he wished to have a copy 1 6 8

Copy case and opinion for him 1 0 0

Attending him therewith 6 8

Oct. 3.—Writing to Mr. Rush, in reply to letter from him 5 0

	£	s.	d.
Oct. 7.—Writing to Mr. Rush, to fix appointment for conference on Thursday next - - - - -		5	0
Oct. 10.—Mr. Clarke and Mr. Fladgate's attendance on Mr. Rush, by appointment, to peruse case drawn out by him for counsel to advise the American Government as to course to be pursued to obtain payment of the fund in court, and advising as to the counsel to be retained, and received directions to submit case to Mr. Pemberton and Mr. Jacob -	1	6	8
Paid coach-hire - - - - -		1	6
Oct. 11.—Looking through the papers in our possession, to compare them with statement in Mr. Rush's case, and altering the latter in one or two particulars, engaged two hours	1	1	0
Two copies of case for counsel, four sheets each - - -	1	6	8
Two copies of act of American Congress, to accompany same, three sheets each - - - - -	1	0	0
One copy of order on further directions in the cause of <i>Hungerford vs. Drummond</i> , also to accompany case, to show the precise position of the funds in court - - - - -	1	1	0
Attending at Doctor's Commons to bespeak an office-copy will of Mr. Smithson for Mr. Rush, at his request - - -		6	8
Attending afterwards to examine and procure same - - -		6	8
Paid for same - - - - -		6	4
Oct. 13.—Writing to Madame de la Batut, as to her demands, and requesting her to appoint a solicitor here to act in the suit about to be instituted by the United States - - -		5	0
Attending Mr. Rush with the fair copies of cases for his perusal and signatures, and we also returned him his authority, and handed him office-copy will - - - - -	13		4
Attending Mr. Pemberton with case - - - - -		6	8
Fee to him therewith, and clerk - - - - -	11	0	6
Fee to him for conference with Mr. Jacob, and clerk - - -	2	9	6
Attending to get same appointed - - - - -		6	8
Fee to Mr. Jacob with case, and clerk - - - - -	8	15	0
Attending him therewith and thereon - - - - -		6	8
Fee to him for conference, and clerk - - - - -	2	4	6
Attending to inform him of time appointed - - - - -		6	8
Nov. 2.—Attending consultation, Mr. Rush being present, when the course to be pursued on behalf of the United States was very fully considered, and it was determined that a supplemental bill should be filed in the name of the President of the United States of America, and the attorney general made a defendant, and counsel promised to write their opinion - - - - -	2	2	0
Nov. 5.—Copy of opinion for Mr. Rush - - - - -		5	0
Writing to him, with same - - - - -		5	0
Nov. 14.—Mr. Clarke and Mr. Fladgate's attendance upon Mr. Rush, as to the bill proposed to be filed, and his suggestions as to the possibility of an abatement from the want of a plaintiff, and explaining the course of practice to him	1	6	8

MICHAELMAS TERM, 1836.

	£	s.	d.
Instructions for bill - - - - -		13	4
Drawing same, folios 30 - - - - -	1	10	0
Paid fee to Mr. Shadwell to settle and sign, and clerk - - - - -	2	4	6
Attending him - - - - -		6	8
Attending Mr. Shadwell, advising hereon and as to Madame de la Batut's claim, and explaining the same fully to him, and conferring on several points arising, and particularly on the nature of the property left by Mr. Smithson - - - - -		6	8
Fair copy bill for Mr. Pemberton to peruse and finally settle, folios 30 - - - - -		10	0
Fee to him and clerk - - - - -	2	4	6
Attending him - - - - -		6	8
Attending Mr. Pemberton, appointing a conference hereon at Westminster - - - - -		6	8
Paid fee to Mr. Pemberton and clerk thereon - - - - -	2	9	6
The like to Mr. Shadwell and clerk - - - - -	1	3	6
Attending him - - - - -		6	8
Writing to Mr. Rush informing him thereon - - - - -		5	0
Attending consultation, Mr. Rush being present, at Westminster, when it was determined not to make Madame de la Batut a party to suit - - - - -	1	6	8
Paid for room - - - - -		5	0
Attending Mr. Shadwell afterwards to procure draught bill as settled - - - - -		6	8
Engrossing bill - - - - -		15	0
Paid for parchment - - - - -		10	0
Paid filing bill - - - - -		7	4
Attending, bespeaking, and afterwards for office-copy bill to serve on the attorney general - - - - -		6	8
Paid for same - - - - -	1	5	0
Attending the attorney general, therewith - - - - -		6	8
Drawing præcipe for subpœna against defendant, Charles Drummond, and attending to bespeak, and for same - - - - -		6	8
Paid for subpœna, and making copy to serve - - - - -		5	10
Fee on obtaining, and undertaking to appear for defendant, Drummond - - - - -		6	8
Nov. 20.—Attending Mr. Wray to press for answer of attorney general, and explaining to him the reason of our urging the same, when he promised to prepare answer immediately; Mr. Rush's invariable direction to us being to use all practicable speed touching every point of the proceedings - - - - -		6	8
The defendant, Charles Drummond, wishing his answer to be taken without oath or signature, the solicitor's fee thereon - - - - -		6	8
Drawing and engrossing petition for same - - - - -		4	0
Attending the defendant's clerk in court, and obtaining his consent thereto - - - - -		6	8
Attending to present the same - - - - -		6	8
Paid answering, and for order, and entering - - - - -		7	0

	£	s.	d.
Copy and service of order - - - - -	2	0	
Writing to Mr. Rush to inform him when it was likely the cause would be heard - - - - -	5	0	
Paid for office-copy answer of defendant, Charles Drummond, folios 16 - - - - -	13	4	
Close copy - - - - -	5	4	
Attending Messrs. Derby and Raven to inform them answer of defendant; Drummond, was filed, and to request them to lose no time in putting in answer of attorney general - - - - -	6	8	
January, 1837.—Several attendances upon Messrs. Derby and Raven and Mr. Wray to urge the filing of the attorney general's answer, which was at length done - - - - -	13	4	
Paid for office-copy answer of attorney general. folios 4 - - - - -	3	4	
Close copy - - - - -	1	4	
Term fee, clerk in court and solicitor - - - - -	16	8	
Letters and messengers - - - - -	5	0	

HILARY TERM, 1837.

Abbreviating bill and answer, folios 50 in all - - - - -	16	8	
Making two briefs of pleadings, 5 sheets each - - - - -	1	13	4
Paid for certificate of pleadings - - - - -	3	4	
Attending for same - - - - -	6	8	
Paid for setting down cause and attending - - - - -	1	5	8
Drawing præcipe for subpoena to hear judgment, and attending for same - - - - -	6	8	
Paid for same and copy - - - - -	5	10	
Service on the clerks in court - - - - -	5	0	
Affidavit of service, &c. - - - - -	3	4	
Oath - - - - -	1	6	
Paid filing affidavit - - - - -	6	2	
Copy title and prayer of bill for judge - - - - -	2	6	
Attending to bespeak, and afterwards for certificate of funds in court in original suit - - - - -	6	8	
Drawing observations to annex to plaintiff's briefs, 4 brief sheets - - - - -	1	6	8
Two briefs copies thereof - - - - -	1	6	8
Two copies order on further directions in original suit, to accompany briefs, 7 sheets each - - - - -	2	6	8
Attending Mr. Rush on his handing us the act of Congress authorizing him to act, and on his instructing us to let a copy of the same accompany the briefs - - - - -	6	8	
Two brief copies same, 3 sheets each - - - - -	1	0	0
Drawing proposed minutes of orders - - - - -	5	0	
Fee to Mr. Shadwell, to settle same - - - - -	1	3	6
Attending him - - - - -	6	8	
Two fair copies minutes to annex to briefs - - - - -	5	0	
Two do for defendants - - - - -	5	0	
Attending them therewith and thereon - - - - -	6	8	
Attending the defendants' solicitors; obtaining their consent to have cause heard short - - - - -	13	4	

	£	s.	d.
Attending Mr. Shadwell, and obtaining his certificate thereof	6	8	
Attending registrar therewith, and getting cause marked short, and put in the next short-cause paper		6	8
Fee to Mr. Pemberton and clerk, with brief	5	10	0
Attending him		6	8
The like to Mr. Shadwell and clerk	3	5	6
Fee to Mr. Pemberton and clerk, on conference as to the practicability of having cause short	1	6	0
Attending him		13	4
Attending appointing consultation		6	8
Fee to Mr. Pemberton and clerk	2	9	6
Attending him		6	8
Like to Mr. Shadwell and clerk	1	3	6
Attending him		6	8
Writing Mr. Rush, informing him thereof		5	0
Attending consultation at Westminster, Mr. Clarke and Mr. Fladgate	1	6	8
Paid for room and cab-hire		7	6
Attending, ascertaining if the several articles mentioned in the master's report in the original cause were safe, and comparing same with the schedule		13	4
Two brief copies schedules to annex to brief, at Mr. Rush's request		10	0
Attending bespeaking transcript of the account in original suit		6	8
Paid for same	1	4	0
Writing Mr. Rush, informing him when cause would be in the paper		5	0
Mr. Clarke and Mr. Fladgate attending court-cause, heard and decreed according to minutes agreed on, with liberty for plaintiff to amend his bill by adding the act of Congress	2	2	0
Paid court fees		13	0
Attending Mr. Rush afterwards, and explaining proceedings to him		13	4
Drawing petition to amend bill		4	0
Attending to present same		6	8
Paid answering, and for order and entering		7	0
Two copies, and services of order		5	0
Instructions to amend		13	4
Drawing amendments, folios 6		6	8
Fee to Mr. Shadwell and clerk, to settle and sign	1	3	6
Attending him		6	8
Engrossing amended bill, folios 36		18	0
Paid for parchment		10	0
Paid filing		7	4
Abbreviating amended bill, folios 36		12	0
Two brief copies of amendments for counsel		10	0
Paid for office-copy amended bill, to serve on the attorney general, folios 36	1	10	0
Attending Messrs. Derby & Co. therewith and thereon		6	8
Fee to Mr. Pemberton and clerk, with amended bill	2	4	6

	£	s.	d.
Attending him		6	8
The like to Mr. Shadwell and clerk	1	3	6
Attending him		6	8
Drawing præcipe for subpoena, and attending to bespeak same		6	8
Paid for same, and making copy to serve		5	10
Service on clerk in court		5	0
Attending registrar, and getting cause put in the paper		6	8
Writing to solicitors for the defendants, informing them thereof		10	0
Attending court order made	1	6	8
Paid court fees		13	0
Instructions for petition to lay out £6,172 9s., cash accumulated in Hungerford vs. Drummond		6	8
Drawing same, folios 40	2	0	0
Fee to Mr. Shadwell and clerk, to peruse and settle same	2	4	6
Attending him		6	8
Engrossing petition to present, as settled, folios 30		10	0
Copy for the master of the rolls		10	0
Attending to present same		6	8
Paid answering		11	0
Two copies petition to serve	1	0	0
Attending serving same		4	0
Two brief copies for counsel, 3 brief-sheets each	1	0	0
Drawing observations to annex to brief petition, 2 sheets		13	4
Two fair copies		13	4
Drawing and engrossing affidavit of service of petition		4	10
Paid oath		1	6
Paid filing and for office copy		6	2
Fee to Mr. Shadwell and clerk therewith	2	4	6
Attending him		6	8
Attending accountant general for, and obtaining certificate		6	8
Attending court petition heard, and ordered as prayed		13	4
Paid court fees		13	0
Writing Mr. Rush, at his request, a report of the proceedings in court		5	0
Paid for minutes of order		2	0
Close copy		1	0
Attending settling		6	0
Paid for order	2	0	0
Attending passing		6	8
Paid entering		4	0
Drawing request to accountant general		2	6
Attending bespeaking investment		6	8
Paid		4	0
Paid for copy of minutes of decree		3	0
Close copy		1	6
Attending settling		13	4
Copy of minutes for Mr. Rush, and writing him therewith and thereon		6	6
Paid for decree	4	10	0
Attending passing		13	4
Paid entering		4	0

	£	s.	d.
Attending		6	8
Attending at the public office, to obtain the name of the master in the original cause		6	8
Paid master's clerk		1	0
Making copy title, and ordering part of decree for the master		5	0
Warrant to consider decree, two copies, and services		6	0
Writing Mr. Rush, informing him thereof, in order to ensure his attendance		5	0
Attending warrant when master ordered the usual advertisement to be issued, and a state of facts, &c. to be brought in as to Madame Batut's claim, and stated that he could not direct inquiries to be made at Pisa, as to the death of Mr. Hungerford, but would allow the costs thereon if instituted		13	4
Attending at Stepney church, to search for burial of John Fitall, but found he was not buried there	1	1	0
Paid search and coach-hire		2	6
Attending Mrs. Fitall, but she declined giving any information, as the last quarterly payment had not been made		6	8
Attending at various places in the neighborhood, to inquire where he was buried, when some persons said in the country, others at Fletcher's chapel, and others at Saint George's in the East, and ultimately discovered a relative, who informed us that he was buried at Shadwell		13	4
Attending at Shadwell church, clergyman and clerk both out, and could not search		13	4
Paid coach-hire		5	0
Attending bespeaking advertisement as to Mr. Hungerford's death		6	8
Paid master's clerk	1	1	0
Attending bespeaking advertisement as to Madame de la Batut's claim		6	8
Paid master's clerk	1	1	0
Attending at Shadwell, searching for and obtaining certificate of Mr. Fitall's death	1	1	0
Paid for certificate and omnibus-hire		5	0
Instructions for affidavit verifying extract		6	8
Drawing same, folios 8		8	0
Engrossing same		2	8
Attending swearing		6	8
Paid oath and exhibit		4	0
Drawing and fair copy state of facts as to Fitall's death, folios 12		8	0
Warrant on leaving same, copy, and service		6	0
Attending Mr. Cullington, Mrs. Fitall's solicitor, as to identity of John Fitall, when he promised to see his client thereon, and let us know the result		6	8
Attending at the Gazette office, to get advertisement as to Mr. Hungerford's death inserted		6	8
Paid, and for Gazette	1	8	2
Attending at the Gazette office, to get advertisement as to Mrs. Batut's claim inserted		6	8
Paid for insertion	1	1	0

	£	s.	d.
Copy of advertisement as to Hungerford's death, for Times newspaper -		2	6
Attending inserting same		6	8
Paid insertion		16	5
The like for Morning Herald		9	2
Paid insertion, &c.		16	5
The like for Standard		9	2
Paid insertion, &c.		16	5
Copy of advertisement as to Mrs. Batut's claim, for the Times newspaper -		2	6
Attending inserting same		6	8
Paid insertion		16	0
The like for Morning Herald		9	2
Paid insertion, &c.		16	0
The like for Standard		9	2
Paid for insertion, &c.		16	0
Several attendances in the city, as to the best mode of inserting the advertisement in foreign papers, and as to getting same translated, &c.	1	1	0
Making copies of advertisements, to get translated into French and Italian -		5	0
Attending translation therewith, and afterwards for same		13	4
Paid them	2	6	6
Making twelve copies for insertion in foreign papers	1	10	0
Attending Mr. Deacon, the newspaper agent, therewith, and instructing him thereon		13	4
Paid for foreign advertisements	12	2	11
Attending paying same, and for receipt		6	8
The proprietors of the Times newspaper having made an error in the name of Mr. Hungerford: attending at their office and rectifying same, and giving instruction for another insertion		6	8
Attending Mr. Deacon to ascertain if he had correspondent at Leghorn to whom we could forward instructions to obtain the information of Mr. Hungerford's death, and obtaining the direction of same		6	8
Writing very long and special letter to Madame Batut as to her claim on the estate, and requiring the necessary proof, and requesting information as to her son's death, &c.		7	6
Copy same, to keep as evidence		5	0
Writing Mr. Rush, with Mrs. Batut's answer		5	0
Attending at Gazette office to get advertisements as to Mr. Hungerford's death inserted second time		6	8
Paid for Gazette and insertion	1	8	2
Copy advertisement for Times newspaper		2	6
Attending inserting same		6	8
Paid insertion, &c.		16	5
The like for Morning Herald		9	2
Paid insertion, &c.		16	5
The like for Standard		9	2
Paid insertion, &c.		16	5

	£	s.	d.
Attending at Gazette office to get advertisement as to claim of Madame de la Batut inserted a second time	-	-	6 8
Paid for insertion	1	1	0
Copy advertisement for Times newspaper	-	-	2 6
Attending inserting same	-	-	6 8
Paid insertion	-	-	16 0
The like for Morning Herald	-	-	9 2
Paid for insertion, &c.	-	-	16 0
The like for Standard	-	-	9 2
Paid for insertion, &c.	-	-	16 0
Term fee	1	1	8

EASTER TERM, 1837.

Attending Mr. Cullington to know if he could identify Mr. Fitall, which he declined doing unless the arrears of the an- nuity were paid	-	-	6 8
Attending bespeaking peremptory advertisement as to Hun- gerford's death	-	-	6 8
Paid master's clerk	1	1	0
The like charges as to Madame Batut's claim	1	7	8
Attending Mr. Rush with Madame de la Batut's letter, and conferring thereon, when he agreed with us in thinking that she had abandoned all claim under the estate	-	-	6 8
Attending at Gazette office to get peremptory advertisement inserted as to Mr. Hungerford's death	-	-	6 8
Paid for Gazette and insertion	1	8	2
Copy advertisement for Times newspaper	-	-	2 6
Attending inserting the same	-	-	6 8
Paid insertion, &c.	-	-	16 5
The like for Morning Herald	-	-	9 2
Paid insertion, &c.	-	-	16 5
The like for Standard	-	-	9 2
Paid insertion, &c.	-	-	16 5
Attending at Gazette office to get peremptory advertisement as to claim of Madame de la Batut inserted	-	-	6 8
Paid insertion	1	1	0
Copy of advertisement for Times newspaper	-	-	2 6
Attending inserting same	-	-	6 8
Paid insertion	-	-	16 0
The like for Morning Herald	-	-	9 2
Paid insertion	-	-	16 0
The like for Standard	-	-	9 2
Paid insertion	-	-	16 0
Attending at Gazette office to get peremptory advertisement inserted a second time as to death of Mr. Hungerford	-	-	6 8
Paid for Gazette and insertion	1	8	2
Copy advertisement for Times	-	-	2 6
Attending inserting same	-	-	6 8
Paid insertion, &c.	-	-	16 5
The like for Morning Herald	-	-	9 2
Paid insertion, &c.	-	-	16 5

	£	s.	d.
The like for Standard - - - - -		9	2
Paid insertion, &c. - - - - -		16	5
Attending at the Gazette office to insert the peremptory advertisement a second time as to claim of Madame de la Batut - - - - -		6	8
Paid for insertion and Gazette - - - - -	1	1	0
Copy advertisement for Times - - - - -		2	6
Paid insertion - - - - -		16	0
The like for Morning Herald - - - - -		9	2
Paid insertion - - - - -		16	0
The like for Standard - - - - -		9	2
Paid insertion - - - - -		16	0
Attending at Mr. Deacon's to ascertain if any of the foreign papers had arrived, when he handed us three of the French papers which he had only received that morning - - - - -		6	8
Perusing and examining same, and ascertaining they were full of errors; attending Mr. Deacon again, and correcting same, and requesting him to get same correctly inserted - - - - -		13	4
Writing Madame de la Batut, in answer to her last letter, and requesting any information she could give as to the death of Mr. Hungerford - - - - -		5	0
Making two copies of peremptory advertisement to get translated into French and Italian - - - - -		5	0
Attending translators therewith, and afterwards for same - - - - -		13	4
Paid them - - - - -	2	6	6
Making 12 copies for insertion in the foreign papers - - - - -	1	10	0
Attending Mr. Deacon therewith, and instructing him thereon - - - - -		13	4
Paid for foreign advertisements - - - - -	12	3	0
Writing long letter to Mrs. Batut, in answer - - - - -		5	0
Attending paying for foreign advertisements and for receipts - - - - -		6	8
Attending Mr. Batut in very long conference, when he urged the claim of Madame de la Batut; but we informed him we had no discretion to apply the funds, except under the direction of the court, and told him to carry in a claim before the master; when he stated "he would submit certain documents of evidence material to the plaintiff's case, for an inspection at half-past 10 o'clock next day" - - - - -		13	4
Paid for oaths of Messrs. Clarke, Fynmore, and Fladgate to three copies of bill delivered to Mr. Rush - - - - -		13	6
April 29.—Attending Mr. Batut for upwards of two hours, when he appeared desirous of making terms as to the information he could give relative to the death of Mr. Hungerford without children, which he assured us we could not obtain elsewhere; and informing him we could communicate with plaintiff thereon, and requesting him to put any legal claims he might have into the hands of his solicitors, and we promised to represent to Mr. Rush his statement - - - - -	1	1	0
Writing to Mr. Rush on the above subject, and requesting appointment to meet him - - - - -		5	0
May 1.—Attending Mr. Gardner in long conference as to the claims of Madame Batut, which we thought were much larger than would be allowed her on proof before the mas-			

	£	s.	d.
ter; and we postponed a final determination until we had again looked through the papers - - - - -	13	4	
May 2.—Attending at Mr. Rush's in long conference as to the application of Mr. Batut, when it was decided that we could not offer any pledge that attention would be paid to his application, but that we must procure from him such information as he could give; and, if it appeared he had any just claim, we would offer no technical or unnecessary delay to it - - - - -	13	4	
May 4.—Attending Mr. Gardner, conferring very fully again hereon; when he stated that Mr. Smithson possessed himself of the property of the late Mr. Dickinson, and never rendered an account; and that he (Mr. Gardner) considered that a bill should now be filed against the defendant, (Drummond,) as executor of the testator in this cause, for such account; and that it was expected a larger sum would be found to have been received; but that at all events a claim would be established to a life interest in a sum equal to that stated in the will to be the nephew's property, viz: £260 per annum, which, in point of fact, had been the amount of allowances made to Mrs. Batut by the testator, as she could prove; and we urged that filing a bill would be useless, as it was impossible to furnish an account, but would search through all the documents in the plaintiff's custody or power, and give them every facility to settle the matter in the master's office - - - - -	13	4	
May 5.—Attending Mons. Batut for upwards of two hours, when we told him the only chance for his obtaining any remuneration from the plaintiff was to furnish him with every information in his power relative to the death of Mr. Hungerford, which he seemed very unwilling to do, without a pledge that something should be done; and we assured him that no party here could give such pledge; and that if he was really disposed to sell his information, he must put his terms into writing; when he stated that he would consider the course to adopt; and advising him to give us the information, and informing him, if he did not, we should resist Madame Batut's claim in every possible way - - - - -	1	1	0
May 6.—Attending at Mr. Deacon's; going through and perusing the documents deposited in the boxes, &c., to answer Mr. Gardner's inquiry, but could find nothing; engaged several hours - - - - -	1	1	0
May 11.—Attending Mr. Gardner as to Mr. Batut's claim, when he required to be furnished with an account of the payments made by Mr. Smithson in his lifetime to Madame de la Batut, which we promised to procure, as evidence of the fund she might claim under the will of Dickinson - - - - -	13	4	
Attending Mr. Deacon, making inquiry as to the foreign papers, when he handed us several French ones, and promised to write for the Italian - - - - -	6	8	
May 18.—Attending Mr. Batut on his furnishing us with the			

required information, when it appeared that Mr. Hungerford was buried at a Dominican convent, at Pisa, under the name of Baron de la Batut, on the 5th June, 1835, and that a stone was raised to his memory; but that his servant, Leo Ferna, could not be found, and he urged his claim upon the consideration of the plaintiff; when we informed him that we could not entertain such claim, but referred him at once to Mr. Rush, or to the American Government	13	4
Attending Mr. Rush afterwards, conferring on Mr. Batut's information and application, when it was determined that a meeting should take place in our presence between Mr. Rush and Mr. Batut	13	4
Attending Mr. Gardner to confer as to appointment with Monsieur Batut, but he was out of town; writing Mr. Rush thereon	5	0
Term fee, &c.	1	1 8

TRINITY TERM, 1837.

Attending at Messrs. Drummond, going through their books to ascertain whether any drafts had been drawn upon them by the testator, which would tally with the claim brought forward by Mrs. Batut, but found it was the testator's habit to draw only for large sums, and his account proved nothing	13	4
May 30.—Paid for copy charge of Mrs. Batut's, folios 36	4	6
Attending warrant to proceed thereon, when the master directed interrogatories to be exhibited for the examination of Mr. Drummond	6	0
June 1.—Paid for copy charge of Mrs. Fitall, folios 12	1	6
June 2.—Attending Mr. Batut further as to his alleged claim, and the information he still withheld and promised to afford us	6	8
June 5.—Attending him again on the above subject, and asking him what he required; when he promised to consider our request, and see us thereon next day	6	8
Attending Messrs. Pemberton, advising them what had taken place, and requesting them to attend the next day with Mr. Batut	6	8
June 6.—Attending warrant on Mrs. Fitall's charge when the master directed an affidavit in support verifying when he died	6	8
June 6.—Attending Mr. Batut, and afterwards Mr. Rush, when Mr. Batut stated that he would make the requisite affidavit, and taking full instructions for same; but on our application for an appointment to swear same, he changed his mind, and stated that he would not make the affidavit unless he had a pledge from Mr. Rush that he would support his claim in America, which he did not feel justified in giving, and therefore the treaty was broken off; engaged upwards of two hours	1	1 0
Instructions for affidavit	6	8
Drawing same, folios 14	14	0

	£	s.	d.
Attending Messrs. Pemberton thereon, and urging them to get affidavit made, and to bring in same evidence in support of their state of facts - - - - -	6	8	
June 9.—Writing Mr. Rush very fully thereon - - - - -	5	0	
June 10.—Attending Mr. Rush in very long conference on Mr. Batut's conduct, and informing him of the nature of the evidence sent us from Italy, which we thought was quite sufficient - - - - -	13	4	
Attending Mr. Cullington, pressing him to leave in the master's office his affidavit, required in support of charge as to Fitall's annuity, when he promised to see his client thereon and to proceed with the charge forthwith - - - - -	6	8	
Paid postage of foreign letter from Mr. Berri - - - - -	4	1	
June 16.—Attending Mr. Gardner to press him to bring in the particulars of proof of Mrs. Batut's claim, and conferring on claim - - - - -	6	8	
June 19.—Paid for copy affidavit in support of charge of Mrs. Fitall, folios 8 - - - - -	1	0	
June 20.—Attending warrant to proceed on charge of Mrs. Fitall's, same allowed - - - - -	6	8	
Paid for warrant for Mrs. Batut to bring in evidence in support of charge, otherwise it would be disallowed, copy and service, (no clerk in court) - - - - -	5	6	
Writing Mr. Rush as to Fitall's annuity - - - - -	5	0	
June 23.—Writing Mr. Rush, at defendant Drummond's request, touching an application made to him by Mr. Batut, and requiring his instructions thereon - - - - -	5	0	
Having received from Leghorn an official certificate of the death of Mr. Hungerford, authenticated by Mr. Falconer, (the consul;) attending at the Foreign Office, to ascertain what gentleman connected with the office could verify the signature, and found Mr. Hertslet; was known to him, but he was from town - - - - -	6	8	
June 23.—Attending Messrs. Pemberton & Co., on their stating they were preparing instructions for the interrogatories, but, previous to completing them, they were anxious to examine some papers belonging to the testator, in a black trunk in our possession—going through same with him—but they afforded him no information; engaged two hours - - - - -	13	4	
June 26.—Attending Mr. Gardner this morning, upwards of two hours, on the subject of Mrs. Batut's claim, endeavoring to come to some arrangement, and to ascertain if her claim was really founded in justice - - - - -	13	4	
June 29.—The master having required evidence of the insertion of the foreign advertisements, and as to their correctness; instructions for affidavits - - - - -	6	8	
Drawing same, and fair copies; folios 14 - - - - -	14	0	
Fair copy for perusal - - - - -	4	8	
Attending Mr. Deacon and Mr. Whittaker, severally, there-with; and finally settling same - - - - -	13	4	
Engrossing same - - - - -	4	8	

	£	s.	d.
Attending Mr. Deacon to the public office, to get sworn to same; Mr. Whittaker could not attend - - -		6	8
Paid two oaths - - - - -		3	0
July 1.—Attending Mr. Whittaker to get sworn - - -		6	8
Paid oath - - - - -		1	6
Paid Mr. Whittaker and Mr. Deacon for loss of time and trouble - - - - -	2	2	0
Attending paying same, and keeping receipt - - -		6	8
Warrant on leaving two copies, and services - - -		6	0
Attending Mr. Gardner, pressing him to support a claim of Mrs. Batut's; informing him, if not done forthwith, we should exclude her altogether from the report; when he informed us, if we did, he should immediately file a bill - -		6	8
Attending warrant, as to Mrs. Batut's evidence in support of her charge, when Mr. Gardner undertook to have interrogatories on the following day - - - - -		6	8
Paid for copy of interrogatories—for twelve close copies - -		1	6
Carriage of parcel from Pisa - - - - -		4	0
Enclosing certificate - - - - -		7	8
Having received the above certificate of the death of Mr. Hungerford, attending Mr. Whittaker to get same translated - - - - -		6	8
Paid his charges - - - - -	2	14	0
Attending warrant to settle interrogatories as to Mrs. Batut's claim, when the master allowed same, subject to any objection the defendant might make to the exhibits which were not left in the office - - - - -		16	8
Warrants for Mrs. Batut, to bring in exhibits copy and service—not in cause - - - - -		5	6
July 17.—Attending counsel, in long conference, as to these interrogatories and exhibits - - - - -		13	4
Paid his fee, and clerk - - - - -	1	6	0
Attending - - - - -		6	8
Attending to Mr. Rush, in very long conference on the state of the suit, and advising with him as to incurring any extra expense in the inquiries after Mr. Hungerford's death - -		13	4
Writing Messrs. Pemberton on the proposed exhibits, and copy - -		5	0
Writing to Mr. Rush very fully, in answer to a letter received from him as to probable time suit would take - - -		7	6
Drawing request to accountant general to invest dividends - -		2	6
Attending him thereon - - - - -		6	8
Paid his fee - - - - -		4	0
Attending Mr. Rush, informing him of the impossibility of obtaining report before office closed, and explaining the necessity of giving Madame Batut the means of establishing her claim, rather than file a bill - - - - -		6	8
Attending warrant to proceed on Mrs. Batut's claim, when exhibits were left in support thereof - - - - -		6	8
Paid for copy examined, folios 28 - - - - -		3	6
Close copy - - - - -		9	4
July 25.—Attending warrant and interrogatories when the same			

	£	s.	d.
were finally settled, the solicitors for Madame de la Batut having brought in exhibits - - - - -		6	8
Drawing and fair copy state of facts as to the death of Henry Hungerford, folios 48 - - - - -	1	12	0
Warrant on leaving same, two copies and services - - - - -		6	0
Instructions for affidavits in support - - - - -		6	8
Drawing same, and fair copy, folios 4 - - - - -		4	0
Attending Mr. Hertslet several times to endeavor to get him to appoint a time to swear, but could not - - - - -		6	8
Attending at the master's office to examine exhibits with the copies, and engaged comparing same, but found one missing - - - - -		6	8
Attending Mr. Rush in a very long conference on the subject of this suit - - - - -		13	4
August 14.—Attending at the Foreign Office and conferring on the affidavit with Mr. Hertslet, when he requested us to leave the report, certificates, and affidavits with him, and he would appoint a time to swear affidavit - - - - -		13	4
Engrossing affidavit, folios 4 - - - - -		2	0
Attending Mr. Hertslet to be sworn - - - - -		6	8
Paid oath and exhibit - - - - -		4	0
Paid his charges - - - - -	1	1	0
Warrant on leaving copy and service - - - - -		6	0
Postage of letter to Mr. Tannin, in answer to his letter relative to death of Mr. Hungerford - - - - -		1	8
Writing very long letter to Mr. Rush, informing him of what had taken place - - - - -		5	0
Instructions for further affidavits in support - - - - -		6	8
Drawing same, and fair copy, folios 20 - - - - -	1	0	0
Engrossing same - - - - -		6	8
Writing Mr. Rush, stating the result of our inquiries touching the property formerly belonging to Mr. Dickinson, under whose will Mrs. Batut claimed - - - - -		5	0
Sept. 2.—Attending Mr. Rush, conferring and explaining the position of Mrs. Batut's claim, and the effect of the information received from France, from which it would appear that such claim was fraudulent - - - - -		13	4
Instructions for affidavit of Mr. Whittaker as to verification of translated copy of report from Pisa - - - - -		6	8
Drawing same, and fair copy, folios 4 - - - - -		4	0
Copy report to annex as exhibit - - - - -		10	0
Attending Mr. Whittaker, conferring thereon, and getting him to settle same - - - - -		6	8
Engrossing same, folios 4 - - - - -		1	4
Attending him to be sworn - - - - -		6	8
Paid oaths and exhibits - - - - -		4	0
Warrant and leaving copy and service - - - - -		8	6
Paid him for loss of time - - - - -	1	1	0
Attending swearing further affidavits in support of plaintiff's facts - - - - -		6	8
Paid oath, &c. - - - - -		4	0
Term fee and letters - - - - -	1	1	8

MICHAELMAS TERM, 1837.

	£	s.	d.
Warrant on leaving same, copy and service - - - - -	6	0	
Warrant to proceed on Mrs. Batut's charge, copy and service	8	6	
Attending warrant, and proceeding thereon - - - - -	6	8	
Instructions for affidavit for Mr. Curdy, verifying translation of notarial act made at Paris after the decease of Mr. Hun- gerford - - - - -	6	8	
Drawing same, and fair copy, folios 4 - - - - -	4	0	
Copy translation, to annex as an exhibit - - - - -		8	
Engrossing affidavit, folios 4 - - - - -	1	4	
Attending to be sworn - - - - -	6	8	
Paid oath, &c. - - - - -	4	0	
Warrant on leaving two copies and service - - - - -	6	0	
Warrant on leaving further evidence - - - - -	6	0	
Attending Mr. Rush in very long conference on the progress of, and advising on, this suit, and taking his instructions thereon - - - - -	13	4	
Paid for transcript of account - - - - -	4	0	
Attending bespeaking, and afterwards for same - - - - -	6	8	
Drawing request to accountant general to invest dividends -	2	6	
Attending bespeaking investment of dividends - - - - -	6	8	
Paid fee - - - - -	4	0	
Instructions for affidavit of Mr. Hertslet, verifying notarial act as to death of Mr. Hungerford - - - - -	6	8	
Drawing same, and fair copy, folios 4 - - - - -	4	0	
Attending him to peruse and settle same - - - - -	6	8	
Engrossing same - - - - -	1	4	
Attending him to be sworn - - - - -	6	8	
Paid oath and exhibit - - - - -	4	0	
Paid his charge - - - - -	1	1	0
Warrant on leaving two copies and services - - - - -	6	0	
Warrant to proceed on state of facts, and charge of plaintiff, as to death of Mr. Hungerford, copy and service - - - - -	6	0	
Attending warrant, same proceeded with and allowed, and warrant ordered to be issued on Mrs. Batut's charge - - - - -	6	8	
Warrant to proceed on state of facts, and charge of Mrs. Ba- tut's, copy and service - - - - -	8	6	
Attending bespeaking transcript in original cause, and after- wards for same - - - - -	6	8	
Paid - - - - -	1	0	
Sept. 29.—Attending Mr. Rush, reporting and advising on the progress of the proceedings in the master's office - - - - -	6	8	
Dec. 4.—Attending warrant and proceeding on facts and charge of Mrs. Batut, when the master directed another warrant to issue - - - - -	6	8	
Warrant to proceed, three copies and service - - - - -	8	6	
Attending warrant when the master said he thought she had established a claim to half of the income of the French fund, but would give us leave to inquire and prove, if we could, that it had been already satisfied and he directed us			

	£.	s.	d.
to obtain an order to state special circumstances in regard to her claim, the words of the decree not being sufficient -		6	8
Writing Mr. Rush very fully thereon - - - - -		5	0
Attending Mr. Rush in a very long conference, and advising with him on the expediency of opposing Mrs. Batut's claim, as it would cause much delay, and stop the order on further directions; and explaining same fully to him, when he promised to consider the same, and see us again thereon -		13	4
Dec. 14.—Attending Mr. Rush in very long conference as to Mrs. Batut, on his having duly considered the subject; when he instructed us to write to Paris to obtain such evidence as we could, and lay same before counsel, to advise on the expediency of opposing Mrs. Batut's claim, we being of opinion that evidence might be obtained that would repel her claim - - - - -		13	4
Dec. 19.—Attending at the Foreign Office to make inquiry touching the swearing of affidavits abroad before a proper tribunal, and found that they could be sworn before the British consul - - - - -		6	8
Instructions for affidavit to be sworn by the stock-broker who transferred same - - - - -		6	8
Drawing same and fair copy, folios 6, and fair copy to send to Paris - - - - -		6	0
Instructions for affidavit of a notary as to some documents in his possession relative to the transfer - - - - -		6	8
Drawing same and fair copy, folios 8 - - - - -		8	0
Fair copy to send to Paris - - - - -		2	8
Writing Mr. Truflant therewith and fully thereon, and urging him to get affidavits sworn if possible in their present shape, but, if not, to advise with some English solicitor at Paris -		7	6
Dec. 29.—Postage letter from Mr. Truflant requiring further instruction - - - - -		1	2
Writing to him very fully thereon - - - - -		7	6
Instructions to amend decree - - - - -		13	4
Drawing notice of motion to amend decree - - - - -		2	0
Copy and service - - - - -		2	0
Drawing and engrossing affidavit of service - - - - -		6	0
Attending swearing - - - - -		6	8
Paid oath - - - - -		1	6
Attending filing and for office copy - - - - -		6	8
Paid - - - - -		6	0
Drawing brief for counsel to move - - - - -		10	0
Paid him and clerk - - - - -	1	3	6
Attending him - - - - -		6	8
Jan. 8, 1838.—Attending Mr. Rush in very long conference on the progress of the cause, &c. - - - - -		13	4
Term fee, &c. - - - - -	1	1	8

Hilary term, 1838.

Jan. 11.—Attending court, motion made and ordered accordingly	13	4
Postage of letter to Mr. Truflant requesting to be furnished with a copy of Mrs. Batut's claim	1	2
Copy same, to send, folios 36	12	0
Writing him very fully therewith and thereon	7	6
Paid for copy minutes	2	0
Close copy	1	0
Attending settling	6	8
Paid for order	1	
Attending register to draw up and pass order	6	8
Paid entering	1	0
Attending to enter same	6	8
Jan. 23.—Postage of a letter from Mr. Truflant, containing a certificate, signed by the chargé d'affaires, which, from his letter, appeared the best evidence he could procure for us	2	4
Writing him that same was not sufficient, and requesting to know, per return, whether or not the stock-broker could make an affidavit as to fact of instructing him thereon, and, if he could not procure such affidavit, to make one himself	7	6
Jan. 30.—Postage letter from Mr. Truflant	5	0
Jan. 31.—Attending Mr. Rush, fully conferring as to the inquiries touching Mrs. Batut's claim, when he stated he would consider same, and decide whether to proceed or not	13	4
Feb. 5.—Attending Mr. Rush on his wishing to know the result of the proceedings if the claim of Mrs. Batut were resisted, and to what extent the proceedings might be carried by her, and explaining same very fully to him, when he wished us to write a letter to him thereon	13	4
Writing letter and copy	5	0
Feb. 6.—Attending counsel in long conference on the evidence obtained from Paris, and as to the expediency of bringing same into the master's office	13	4
Fee to him and clerk thereon	1	6 0
Attending him	6	8
Copy of Mr. Truflant's affidavit, to keep	2	8
Warrant on leaving, three copies, and services	8	6
Warrant to proceed on claim, three copies, and services	8	6
Feb. 19.—Attending warrant and proceeding on state of facts and affidavits in opposition to Mrs. Batut's claim, when claim allowed	6	8
Warrant to show cause why warrant on preparing draught report should not issue, three copies, and services	8	6
Feb. 21.—Attending warrant, no cause shown	6	8
Warrant, on preparing three copies, and services	8	6
Copy will of testator for the master, folios 8	2	8
Paid for copy draught report, folios 48	6	0
Close copy	16	0
March 1.—Warrant to settle, three copies, and services	8	6

	£	s.	d.
Attending same		6	8
Attending Messrs. Pemberton, conferring very fully on the draught report and the several inaccuracies therein, and calculating amount of arrears, &c. due		6	8
Attending warrant on charge of Messrs. Clarke & Co., when same allowed		6	8
Paid for copy same, folios 6			9
Close copy		2	0
Paid for copy affidavit in support, folios 4			6
Close copy		1	4
Another warrant to settle report, three copies, and services		8	6
Attending warrant and settling report; but the master directed many additions to be made thereto, and an affidavit to be obtained from a broker in the city as to the amount of exchange		6	8
Attending Mr. Rush in very long conference thereon before, at, and after the above warrant, when he directed us to obtain the order on further directions as soon as possible		13	4
March 9.—Attending Mr. Rush again, conferring fully herein		13	4
March 12.—Attending Messrs. Pemberton as to the cause of delay in obtaining the necessary affidavit, when they promised to bring same in in a few days		6	8
Paid for copy affidavit of Mr. Boyd, folios 6			9
Close copy		2	0
March 17.—Attending warrant and proceeding on state of facts		6	8
March 20.—Paid for fresh copy report, folios 44		5	6
Close copy		14	8
Warrant to sign, three copies, and services		8	6
Attending same		6	8
Paid for drawing, signing, and transcribing report		3	9
Paid filing and for office copy		1	16
Attending to file		6	8
Drawing and engrossing petition to confirm report absolute in the first instance		4	0
Attending getting consents		6	8
Attending to present		6	8
Paid answer and for order		7	0
Two copies and services on clerks in court		4	0
Draught on Pemberton		2	6
Drawing and engrossing petition, to set down cause on further directions and costs		4	0
Attending to present		6	8
Paid answer and setting down cause, &c.		19	0
Two copies, and services, order on clerks in court		4	0
Draught on Messrs. Pemberton		2	6
Attending defendant's solicitor for consent to hear cause immediately		13	4
Making copy decree for the master of the rolls, four sides		2	8
Do. report, folios 48		16	0
Attending to leave same		6	8
Attending Mr. Rush in very long conference, explaining that			

	£	s.	d.
the report had been confirmed, and giving him extracts of all the dates and proceedings, &c., and advising him as to the future proceedings, &c. - - - -	13	4	
Drawing and engrossing copy affidavit of service of order to set cause down - - - - -	3	4	
Attending to be sworn - - - - -	6	8	
Paid oath - - - - -	1	6	
Attending filing and afterwards for same - - - - -	6	8	
Paid filing and for office copy - - - - -	3	4	
Attending Mr. Rush, informing him cause was set down and would be heard in Easter term, and conferring thereon -	13	4	
Instructions for petition - - - - -	6	8	
Drawing and fair copy petition to be heard with the cause, on further directions, folios 88 - - - - -	4	8	0
Attending Mr. Rush, conferring thereon, when he wished counsel to be advised with thereon - - - - -	13	4	
Attending conferring with Mr. Shadwell thereon, when he advised cause to be set down and petition to be presented afterwards - - - - -	13	4	
Paid his fee and clerk - - - - -	1	6	0
Attending him - - - - -	6	8	
Drawing proposed minutes, folios 12 - - - - -	12	0	
Fair copy for Mr. Shadwell - - - - -	4	0	
Attending him in conference and settling same - - - - -	13	4	
Paid his fee and clerk - - - - -	1	6	0
Attending him - - - - -	6	8	
Two copies minutes for defendants - - - - -	6	8	
Attending them therewith and thereon, and finally agreeing to same - - - - -	13	4	
Drawing brief on further directions, seven brief-sheets -	2	6	8
Two fair copies for counsel - - - - -	2	6	8
Drawing observations for plaintiff, two brief-sheets -	13	4	
Two fair copies for counsel - - - - -	13	4	
Attending Messrs. Pemberton on their requesting some information in order to draw their petition, and giving them same, engaged some time, term fee, &c. - - - - -	1	1	8

EASTER TERM, 1838.

Attending to bespeak and afterwards for certificate of funds in court in this cause - - - - -	6	8	
The like in original cause - - - - -	6	8	
Fee to Mr. Pemberton and clerk, with brief - - - - -	5	10	0
Attending him - - - - -	6	8	
Fee to Mr. Shadwell and clerk - - - - -	3	5	6
Attending him - - - - -	6	8	
Attending Mr. Shadwell, obtaining his certificate for cause to be heard short - - - - -	6	8	
Attending register therewith, and getting cause put in the paper for next short cause day - - - - -	6	8	

	£	s.	d.
Attending Mr. Pemberton to appoint a consultation at Westminster - - - - -		6	8
Fee to Mr. Pemberton and clerk thereon - - - - -	2	9	6
The like, Mr. Shadwell - - - - -	1	3	8
Attending him - - - - -		6	8
Writing to Mr. Rush informing him of consultation - - -		5	0
Attending consultation when Mr. Pemberton expressed his regret that the petition had not been presented, and directed Mr. Shadwell to draw same immediately - - - - -		13	4
Paid for room - - - - -		5	0
May 1.—Mr. Clarke and Fladgate's attending court; cause heard and ordered as per minutes, agreed, but the order to stand over for petition to come on as to funds being paid to Mr. Rush - - - - -	2	2	0
Paid court fees - - - - -		13	0
Attending Mr. Rush in very long conference, explaining to him fully what had taken place, and he directed us to use all expedition - - - - -		13	4
Perusing and considering former petition, and altering same in many respects - - - - -	1	1	0
Fee to Mr. Shadwell to peruse and settle - - - - -	3	5	6
Attending him - - - - -		6	8
Engrossing same and paper, folios 77 - - - - -	1	8	8
Copy for the master of the rolls - - - - -	1	8	8
Attending presenting petition, when the secretary directed that it be taken to Westminster to be answered by a certain day - - - - -		6	8
Attending Mr. Pemberton, instructing him to get day appointed accordingly - - - - -		6	8
Attending court when Mr. Pemberton mentioned it to the court, and it was ordered to be answered for Tuesday next - - - - -		6	8
Attending his lordship's secretary, and getting same answered accordingly - - - - -		6	8
Paid answering - - - - -		6	6
2 copies petition for service, folios 77, each - - - - -	2	17	4
Attending serving the same on clerks in court - - - - -		4	0
Drawing and engrossing affidavit of service - - - - -		3	4
Attending to be sworn - - - - -		6	8
Paid oath - - - - -		1	6
Attending to file and for office copy - - - - -		6	8
Paid for office copy - - - - -		3	4
2 brief copies petition, 8 brief sheets, each - - - - -	2	13	8
Drawing observations to accompany 2 brief sheets - - -		13	4
2 brief copies for counsel - - - - -		13	4
Attending Mr. Rush again hereon, conferring and advising very fully hereon - - - - -		13	4
Attending register to get original decree altered, as directed by the court, and after some trouble getting same altered accordingly - - - - -		13	4
Attending to enter and afterwards for same - - - - -		6	8
Paid at entering seat for alteration - - - - -		1	0
Fee to Mr. Pemberton and clerk with brief petition - - -	2	4	6

	£	s.	d.
Attending him - - - - -		6	8
Fee to Mr. Shadwell and clerk - - - - -	1	3	6
Attending him - - - - -		6	8
Writing Mr. Rush that the court would not sit on Tuesday, and that petition would be in on Wednesday - - - - -		5	0
Attending court, petition heard and ordered as prayed - - - - -		13	4
Paid court fees - - - - -		7	0
Attending Mr. Rush on the amount of funds in the cause, and writing him out full particulars thereof, and taking his in- structions to expedite the transfer and payment to him - - - - -		13	4
Writing to Mr. Truftant as to his charges and expenses, &c. - - - - -		5	0
Paid postage letter enclosing same - - - - -		2	4
Paid same to his agents - - - - -	10	0	0
Attending paying same and for receipt - - - - -		6	8
Writing Mr. Rush, at his request, with full particulars of what took place at the hearing of the cause and also of the peti- tion, and generally on the cause - - - - -		7	6
Attending Mr. Hussey to draw up minutes, when he said the registrar, Mr. Callis, who was in court on the petition, ought to draw them up: attending on Mr. Callis and with him to Mr. Hussey, and arguing same, when it was finally determined that Mr. Hussey should draw up the minutes, and date them the 12th—engaged upwards of an hour - - - - -		13	4
Paid for copy minutes of decree - - - - -		10	0
Close copy thereof - - - - -		5	0
Several attendances upon the registrar, to procure him to pass order, which was at length done - - - - -		1	6
Paid for order on further directions - - - - -		3	10
Paid expenditure - - - - -		10	0
Term fee, &c. - - - - -	1	1	8

TRINITY TERM, 1838.

Attending passing same - - - - -		13	4
Paid entering same - - - - -		6	6
Attending - - - - -		6	8
Making copy ordering part of decree for the master - - - - -		2	6
Drawing this bill of costs, and fair copy for the master, fos. 180 - - - - -	6	0	0
Warrant on leaving same, copy and service - - - - -		4	6
May 8.—Warrants to tax copies and services - - - - -	1	16	0
Attending same - - - - -	2	13	4
Paid clerk in court - - - - -	2	13	4
Warrant for defendants to bring in their costs, two copies and services - - - - -		6	0
Paid for copy defendant Drummond's costs, folios 72 - - - - -		9	0
Attending three warrants, taxing same - - - - -	1	0	0
Paid clerk in court - - - - -	1	0	0
Paid for copy attorney general's costs, folios 16 - - - - -		2	0
Attending warrant, taxing same - - - - -		6	8
Paid clerk in court - - - - -		6	8
Paid for certificate of costs and transcribing - - - - -	1	0	6

	£	s.	d.
Attending to file - - - - -		6	8
Paid filing same - - - - -		3	10
Attending accountant general's, bespeaking clerks - -		6	8
Paid entering clerk for costs - - - - -		2	4
Attending bespeaking carrying over of the funds and cash from Hungerford <i>vs.</i> Drummond to this cause - -		6	8
Paid - - - - -		5	0
Attending bespeaking carrying over of £5,015, bank £3 per cents. to Mrs. Batut's account, paid - - - - -		6	8
Attending bespeaking direction for transfer of all the funds to Mr. Rush in the £3 per cent. annuities - - - - -		6	8
Paid - - - - -		2	6
The like on reduced annuities - - - - -		9	2
The like on bank stock - - - - -		9	2
Attending bespeaking transfer to Mr. R. Rush - - - - -		13	4
Paid - - - - -	1	4	0
Paid messenger - - - - -		1	6
Instructions for affidavit as to residue of cash - - - - -		6	8
Drawing and fair copy affidavit - - - - -		6	8
Attending to be sworn - - - - -		6	8
Paid oath - - - - -		1	6
Paid for office copy - - - - -		4	8
Attending bespeaking check of residue of cash - - - - -		6	8
Paid clerks for their trouble - - - - -	5	5	0
Attending to identify Mr. Rush - - - - -		6	8
Paid entering check - - - - -		2	4
Term fee, &c. - - - - -	1	1	8
Letters, messengers, &c. - - - - -	1	10	0
For various attendance, not hereinbefore enumerated, on Messrs. Derby and Raven, the solicitors for the attorney gen- eral; Messrs. Pemberton, Crowley, and Gardner, the solici- tors for Mr. de la Batut; and Mr. Cullington, the solicitor for Mr. Fitall, to urge their proceeding in the several matters connected with the suit with all possible expedition; it being the earnest wish of Mr. Rush that the suit should be brought to a final conclusion with the least possible delay	5	5	0
May 25.—Attending Mr. Rush; conferring very fully with him as to the several matters remaining to be done to wind up the suit - - - - -		13	4
June 2.—Attending Mr. Rush in a long conference as to wind- ing up the suit, and the difficulties we had to encounter in the accountant general's office - - - - -		13	4
Attending in the city to make inquiries as to the transfer of stock, and found it would not be made until Tuesday, but that Mr. Rush could sell it out the same day - - - - -		13	4
Writing to Mr. Rush to inform him thereof, and special mes- senger with letter - - - - -		7	6
Attending Mr. Rush afterwards, informing him what arrange- ment we should suggest to him as to selling the stock - -		6	8
June 4.—Attending Mr. Rush again this day, conferring on the transfer of stock, and as to winding up the suit; and he re-			

	£	s.	d.
requested us to write him an official letter announcing the transfer of the funds - - - -	13	4	
Attending at the accountant general's, to learn if the stocks were transferred, which we found was done - -	6	8	
Writing an official letter to Mr. Rush to inform him thereof, according to his request - - - -	5	0	
June 5.—Attending Mr. Rush, conferring very fully in what remained to be done, and as to the steps to be taken by him to realize the funds - - - -	13	4	
June 6.—Attending Mr. Rush on the subject of the residue of cash in court, which was to be paid to him, and explaining that we could procure same out of court by Saturday; and he requested to be furnished with a copy of the list of articles deposited with Mr. Deacon - - - -	13	4	
Copy list for him, (schedule marked F;) one trunk only, (see list)	2	6	
June 8.—Attending the accountant general's to learn if check was ready for Mr. Rush, and found it was, and would be signed this day - - - -	6	8	
Writing to Mr. Rush to inform him thereof, and to make an appointment for him to attend and receive same -	5	0	
June 12.—Attending Mr. Deacon to ascertain if the boxes could be sent to our office; and he not being at home, writing to him thereon - - - -	6	8	
June 18.—Attending Mr. Deacon to make appointment for Mr. Rush to attend to inspect contents of boxes - -	6	8	
Writing to Mr. Rush to inform him - - - -	5	0	
June 20.—Attending at Mr. Deacon's, 31 Upper Norton street, to meet Mr. Rush to inspect the contents of boxes, &c.; but the boxes being more numerous than he expected, he deferred the close examination of them for the present -	13	4	
June 30.—Attending Mr. Rush, conferring on what remained to be done, and making arrangements with him as to sending the box we had here, together with the plate and other articles, to Mr. Deacon's, where we should meet him and Colonel Aspinwall, the consul, and seal all the boxes up -	13	4	
Making list of the plate and other articles - - - -	5	0	
Mr. Rush wishing to know what the several funds would have realized if they could have been sold immediately upon the death of Mr. Hungerford, attending at Messrs. Drummond's to learn what the prices of the several stocks then were, and making a calculation accordingly; and drawing out a statement for Mr. Rush, from which it appeared that, after deducting all the costs, the funds had realized £173 12s. 1d. more now than they would have done if the funds had all been sold immediately upon the decease of Mr. Hungerford - - - -	2	2	0
Paid for a new lock to box - - - -	5	0	
July 6.—Attending at Mr. Deacon's to meet Mr. Rush and Colonel Aspinwall, when the several boxes were sealed up, and directions given for their transmission to the wharf -	1	1	0

	£	s.	d.
Attending at the accountant general's, to bespeak a transcript of account - - - - -		6	8
Paid for same - - - - -		8	0
Attending to procure same - - - - -		6	8
Several other attendancies upon Mr. Rush, furnishing him with all such further information as he required previous to his leaving this country for America - - - - -	3	3	0
Letters and messengers, coach-hire, and various incidental expenses - - - - -		15	0
	<u>£490</u>	<u>4</u>	<u>10</u>

IN CHANCERY.

Between the President of the United States of America, *plaintiff*,
and
 Chas. Drummond, Esq., and her Majesty's Attorney General, *defendants*. }

Thomas Clarke, Thomas George Fynmore, and William Mark Fladgate, of Craven street, Strand, in the county of Middlesex, solicitors and copartners, severally make oath and say, that the several disbursements contained in the foregoing account have been duly made, and that the several charges therein contained are just and true, to the best of these deponents' knowledge and belief.

THOMAS CLARKE,
 THOS. G. FYNMORE,
 WM. M. FLADGATE.

Sworn by all the deponents, at the public office, Southampton Buildings, in the county of Middlesex, the 11th day of July, 1838, before me,
 E. WINGFIELD.

Account of Thomas Aspinwall.

I, Thomas Aspinwall, of London, being duly sworn on the Holy Evangelists, do declare and depose that the within account is just and true, and that the services therein referred to and specified in the vouchers of said account, signed by me, and marked respectively No. 1, No. 2, were duly and actually performed.

THOS. ASPINWALL.

Sworn this seventeenth day of July, 1838, at London, before me.

J. COWAN, *Mayor*.

The Hon. Richard Rush, agent for the Smithsonian fund, in account current with Thomas Aspinwall.

Dr.

Cr.

1838.	1838.
July 16. To am't of invoice of sovereigns, procured and shipped on board the Mediator, as per copy herewith, £105,565 12 5	July 16. By cash received from him - - - £106,370 7 3
To commission for va- rious services, as per account No. 1, here- with, - - - 797 15 6	
To charges on 14 pack- ages, shipped on board the Mediator, as per account No. 2, here- with, - - - 6 19 4	
<hr/> £106,370 7 3	<hr/> £106,370 7 3

THOS. ASPINWALL.

LONDON, *July 17, 1838.*

(No. 1.)

The Hon. Richard Rush in account with the Smithsonian fund,

To Thomas Aspinwall, Dr.

For services rendered throughout the month of June and up to this date, in July; in attending your acceptance of all the stocks transferred to you by the accountant general of the court of chancery; advising, negotiating, and completing, under your directions, and realizing the proceeds of various contracts for the sale of the same stocks, consisting of consols, bank stock, and three per cent. reduced annuities, sold at different periods and in different parcels; attending payment and receipt of balances, dividend, and the respective transfers to the various purchasers of the same; obtaining, verifying, arranging, packing, and securing for shipment 104,960 sovereigns, being the amount of proceeds of the Smithsonian fund, (less premiums of insurance, charges, and expenses;) contracting for freight; entering and clearing at the custom-house; shipping and effecting insurance at the five principal offices, and with thirty-two private underwriters at Lloyd's.

Commission at $\frac{3}{4}$ per cent. - - - £797 15s. 6d.

THOMAS ASPINWALL.

LONDON, *July 17, 1838.*LONDON, *July 17, 1838.*

Received of the honorable Richard Rush the within-mentioned sum seven hundred and ninety-seven pounds fifteen shillings and sixpence sterling, (£797 15s. 6d.) for which I have credited in my accounts, and also signed this and a duplicate receipt of the same tenor and date.

THOMAS ASPINWALL.

£797 15s. 6d.

LONDON, *July 13, 1838.**The honorable Richard Rush*

To _____.

	£	s.	d.
To unpacking and repacking 14 packages, at 2s. 6d. -	-	1	15 0
cord and nails for mending do. -	-	3	6
		<u>18</u>	<u>6</u>
	£1	18	6

Paid 14th July, 1838.

WILLIAM BROWN.

A true copy original in Thomas Aspinwall's account,
JAMES M. CURLEY.

(No. 2.)

JULY 13, 1838.

*Account of charges on 14 packages, marked "the United States," Nos. 1 to 14, shipped on board the ship Mediator, Christopher H. Champ-
lin master, by order of the honorable Richard Rush, for account and
risk of the Government of the United States.*

	£	s.	d.
Cartage and portorage - - - - -	1	0	6
Duty and entry - - - - -	1	2	6
Dock dues - - - - -	15	10	
Bills of lading - - - - -	3	6	
1 packing-case (No. 14) - - - - -	3	6	
Shipping, entering, and clearing 14 packages, at 2s. 6d. -	1	15	0
Cord and nails for mending do. -	3	6	
*Unpacking and repacking do., and cording, mending, and securing, at 2s. 6d. each - - - - -	1	15	0
	<u>£6</u>	<u>19</u>	<u>4</u>

Received the above amount in account with Mr. Rush :
THOMAS ASPINWALL.

Mediator, Champlin, New York.

T. ASPINWALL.

British coin for and on account. Entry, 5s. 6d.

THOMAS TANNER.

Witness: JAMES M. CURLEY.

JULY 17, 1838.

When paid, to be immediately exhibited at the Department, where this
bill has been made out; by which business will be materially expedited.

* In consequence of the very loose and careless manner in which the boxes were originally
packed, and of the damaged state of the packages, this charge was unavoidably incurred to pre-
vent the contents from being ground to pieces, and lost on the passage to the United States.

St. Catharine Docks, No. 1872, wharfage-book, outwards.

Mr. Aspinwall, Dr. to the St. Catharine Dock Company.

N. B.—The amount of these charges to be paid to the collector, who is the only officer authorized to receive money on account of the company.

1838.	Per Mediator—	£	s.	d.
July 17.	[A] 1 to 10, wharfage and shipping 10 cases, at 2s.	1	0	0
	11, do. do. 1 case, at 1s.	0	1	0
		<hr/>		
		1	1	0

(One pound one shilling.)

JULY 17, 1838.

Received, H. WHARTON, *Collector.*

Witness: JAMES M. CURLEY.

(Entered schedule.)

The invoice having necessarily been made up before the cases were actually shipped on board, the usual charge of ten shillings was inserted therein; and it was not ascertained, until after they were shipped, that a difference was made with respect to bullion; amounting, in this instance, to eleven shillings, which has not been paid by Mr. Rush, but by Thomas Aspinwall, and by him relinquished.

T. Aspinwall, Esq. to bullion porters, Dr.

1838.		£	s.	d.
July 16.	11 boxes and packing sovereigns, at 3s. 6d.	-	1	18 6
"	105 bags for sovereigns, at 6d.	-	2	12 6
"	For packing and marking	-	0	2 6
		<hr/>		
		4	13	6

Witness: JAMES M. CURLEY.

Paid: C. HARDINGHAM.

Colonel Aspinwall to Mrs. Clark, Dr.

1838.

July 17.	For cartage and portorage of eleven boxes of bullion from the bank to the St. Catharine's dock,	-	-	-	-	-	8 shillings.
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Received: HENRY X POTTER.

Witness: JAMES M. CURLEY.

Invoice of eleven boxes of gold coin, shipped on board the ship Mediator, of New York, Christopher H. Champlin master, bound to New York, by order of the Hon. Richard Rush, and for the account and risk of the United States.

	£	s.	d.
A 1 to 10. Ten boxes, each containing £10,000, (sovereigns)	100,000	0	0
11. One box, containing	4,960	8	7
<hr/>			
	104,960	8	7

<i>Charges.</i>				£	s.	d.	£	s.	d.	
105 bags, at 6 <i>d.</i> each	-	-	-	-	2	12	6			
11 boxes, at 3 <i>s.</i> 6 <i>d.</i> each	-	-	-	-	1	18	6			
Packing and marking	-	-	-	-		2	6			
Porterage and cart-hire	-	-	-	-		8	0			
Bills of lading	-	-	-	-		3	6			
Entry 5 <i>s.</i> 6 <i>d.</i> , dock charges 10 <i>s.</i>	-	-	-	-		15	6			
								6	0	6
Insurance on £106,400, at $\frac{1}{2}$ per cent.	-	-	-	-	532	0	0			
Policies and stamp-duties	-	-	-	-	67	3	4			
								599	3	4
						</				

THOMAS ASPINWALL.

				Policy and duty.		
				£	£	£. s. d.
Insured with the Indemnity,	-	-	30,000, for 150			18 15 0
Insured with the London Insurance,	-	-	10,000, for 50			6 5 0
Insured with the Alliance,	-	-	20,000, for 100			12 10 0
Insured with the Royal Exchange,	-	-	15,000, for 75			9 7 6
Insured with the Marine Insurance,	-	-	10,000, for 50			6 5 0
Insured at Lloyd's,	-	-	21,400, for 107			14 0 10
				£106,400	£532	£67 3 4

MEM.—The sovereigns are packed in bags of 100 each, with the exception of one, in case No. 11, which contains 960 sovereigns, and 8 shillings and 7 pence wrapped in paper; each case being sealed with two seals.

JULY 16, 1838.

F.

Schedule referred to in the bill of costs.

A large trunk ;
 A box containing sundry specimens of minerals, marked E ;
 A brass instrument ;
 A box of minerals, marked F ;
 A box of chemical glasses, marked G ;
 A packet of minerals, marked H ;
 A glass vinegar cruets ;
 A stone mortar ;
 A pair of silver-plated candlesticks and branches ;
 A pair of silver-plated candlesticks, no branches ;
 A hone in a mahogany case ;
 A plated wire flower-basket ;
 A plated coffee-pot ;
 A plated small one ;
 A pair of wine-coolers ;
 A pair small candlesticks ;
 Two pairs of saltcellars ;
 A bread-basket ;
 Two pairs of vegetable dishes and covers ;
 A large round waiter ;
 A large oval do. ; two small do. ;
 Two plate-warmers ;
 A reading-shade ;

Sundry articles in packet and in trunk.

(a) A gun ;
 (a) A mahogany cabinet ;
 (a) Two portraits, in oval frames.

China tea-service, viz :

(a) Twelve cups and saucers ;
 (a) Six coffee-cups ;
 (a) A tea-pot ;
 (a) A slop-basin ;
 (a) Sugar-basin and lid ;
 (a) Two plates ;
 (a) Milk-jug ;
 (a) Tea-canister ;
 (a) Two dishes ;
 (a) A landscape, in a gilt frame ;
 (a) A Derby spa vase ;
 (a) A China tub ;
 (a) A piece of fluor ;
 (a) A pair of glass candlesticks ;
 A marble bust.

Books.

Sundry pamphlets on philosophical subjects, in packet marked A ;
 The like, marked B ;

Struggles through life ;
 Bibliotheca Parisiana ;
 La Platina l'Or Blanc ;
 Contorides des Indiens ;
 Sundry pamphlets on philosophical subjects, marked C ;
 Weld's Travels in North America, 2 vols ;
 Bray's Derbyshire ;
 Twenty-three numbers of Nicholson's Journal of Natural Philosophy,
 in a case, (D ;)
 Memoire d'un Voyageur qui le repose ;
 Hamilton in Antrim
 Londres et de ses Environs ;
 Stew on Solids ;
 Essais de Jean Key ;
 Mon Bonnet de Nuit ;
 Domestic Cookery ;
 Catalogue de Fossils des Roches ;
 The Monthly Review, 78 Nos. ;
 The Monthly Review, 26 volumes ;
 Philosophical Transactions for the year 1826 ;
 Anthologies et Fragments Philosophiques, 4 volumes ;
 Two large boxes filled with specimens of minerals and manuscript treatises, apparently in the testator's handwriting, on various philosophical subjects, particularly chemistry and mineralogy ;
 Eight cases and one trunk filled with the like.

Those articles to which this mark (*a*) is prefixed were not in the trunk No. 13 when it was first opened in the consulate of the United States in our presence.

All the linen in trunk No. 13 was transferred from case 7, and sundry articles of plated ware and philosophical instruments, &c. were transferred from case 12. Sundry books, which were tied together, were also put in this case.

G.

43 CRAVEN STREET, STRAND, *July 13, 1838.*

DEAR SIR: With reference to the gun, a few pieces of China, and a few other articles of a miscellaneous nature, which are mentioned in the schedule of property formerly belonging to Mr. Smithson, (of which schedule we furnished to you a copy,) and which articles do not now appear to be amongst the property lately under the charge of Messrs. Deacon, we beg to state that the schedule in question was a schedule prepared at the time of Mr. Smithson's death, now several years back, and that we have no doubt that the articles (which appear to have been such as would be used personally by Mr. Smithson) were handed to Mr. Hungerford, who, indeed, had he thought fit to apply for them, would, under the direction of the court, have obtained possession of all the property lodged with Messrs. Deacon, and which is now handed over to you as representative of the United States.

We are, dear sir, your very obedient servants,

CLARKE, FYNMORE, & FLADGATE.

RICHARD RUSH, Esq.

DEPARTMENT OF STATE,

Washington, September 24, 1838.

SIR: I am directed to transmit to you, for settlement, the enclosed account of Mr. Richard Rush, and a letter from him (No. 36) accompanying it. The balance which may be found due to Mr. Rush he wishes to have remitted to him. The compensation and allowance for expenses are to be up to the period charged in the account, (the 20th instant.)

It is presumed that the amount repaid to Mr. Rush by the solicitors in London, mentioned in his letter, (£116 2s. 2d. sterling,) which was paid into the Treasury, together with the avails of the Smithsonian legacy, will be brought to the credit of the appropriation from which it was originally taken, and thus form a fund from which the balance due to Mr. Rush can be paid. The papers explanatory of this circumstance have been transmitted, together with the account of the legacy, to the Treasury Department.

I am, sir, your obedient servant,

EDWARD STUBBS, *Agent.*

STEPHEN PLEASANTON, Esq.,
Fifth Auditor.

TREASURY DEPARTMENT,

December 3, 1838.

SIR: I have the honor to report to you that, under the act of Congress approved 1st July, 1836, in relation to the legacy bequeathed to the United States by James Smithson, the sum of \$508,318 46 has been received, and paid into the Treasury of the United States.

In compliance with the provisions of the sixth section of the act of Congress for the support of the Military Academy of the United States, and for other purposes, approved 7th July, 1838, the sum of \$499,500 has been expended in the purchase of five hundred bonds of the State of Arkansas, for one thousand dollars each, bearing six per cent. interest, payable semi-annually, on the first days of January and July in each year, from the fourth day of September last, (the period of their purchase.) The further sum of \$8,270 67 has been applied to the purchase of eight bonds of the State of Michigan, bearing six per cent. interest, payable semi-annually hereafter, on the first Mondays in January and July, from the 1st of May last. The interest on all these bonds is payable at the city of New York.

There is still left in the Treasury the sum of \$547 79 which has not yet been invested, but will be as soon as a favorable opportunity offers.

The amount received in London by the agent of the United States, under the decree of the court of chancery, of England, was the gross sum of £106,490 11s. 9d., including the sum of £116 2s. 2d. for costs refunded. This was reduced, by the payment of commissions, insurances, &c., to the sum of £104,960 8s. 9d., which was brought into the United States in gold, and produced at the Mint the sum of \$508,318 46, before mentioned.

This Department, having doubts as to what constituted the amount of the Smithsonian fund, consulted the Attorney General, and he has given his opinion (hereto annexed, A) that the proper construction to be given

to the legislation of Congress on this subject requires that the gross amount of the payment made to the agent of the United States, after deducting the costs refunded, as before stated, shall constitute the fund, "and all expenses, of whatever kind or nature, should be paid out of the appropriation made by Congress." That appropriation, however, not being sufficient, an estimate will accordingly be submitted to the House of Representatives, to enable the Department to comply with the acts of Congress referred to, in accordance with the construction thus given to them by the Attorney General.

The estimate to be submitted is for \$10,000. Of this, the sum of \$128 24 will be required to make good a deficiency in the former appropriation. The sum of \$6,848 12 will be required to be added to the fund, on the principles laid down by the Attorney General. This sum is estimated on the same ratio as upon the amount produced in the United States on the remittance which has been received. The balance, \$3,023 64, will be required to pay the freight, &c., of the remittance, amounting to \$2,235 63, and such expenses as may be incurred in disposing of the personal effects of Mr. Smithson, which have been brought to the United States; for the sale of which I would suggest that provision should be made by Congress.

This report is submitted to you, in compliance with the resolution of the House of Representatives, which you referred to this Department for the necessary information that its archives would furnish in relation to the call thus made on you.

Respectfully submitted:

LEVI WOODBURY,
Secretary of the Treasury.

To the PRESIDENT of the United States.

A.

ATTORNEY GENERAL'S OFFICE,

November 16, 1838.

SIR: I have the honor to acknowledge the receipt of yours of the 11th of October last, requesting my opinion upon various points in relation to the Smithsonian legacy. A separate answer to each of your inquiries is deemed unnecessary, as the opinion I entertain, and am about to express in general terms, will be found to cover most of them.

James Smithson, of London, on the 23d of October, 1826, executed his last will and testament, by which, upon the happening of certain contingencies, he bequeathed to the United States of America all his property, to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men. The Congress of the United States, by an act passed 1st of July, 1836, accepted the bequest, and directed the President to appoint an agent to assert and prosecute the claim, and by said act pledged the faith of the United States to apply the moneys and other funds which might be received to carry into effect the provisions of said will: and, by the fourth section of said act, it is provided, "that to the end that the claim to said bequest may be prosecuted with effect, and the necessary expenses

in prosecuting the same be defrayed, the President of the United States be, and he is hereby, authorized to apply to that purpose any sum not exceeding \$10,000," &c.

From these provisions it appears to me that Congress intended that there should be no diminution of the funds bequeathed for the purpose specified in said will, but that the whole, whatever they might amount to, should be applied to carry into effect the intention of the testator; and when the object of the bequest is considered, it cannot be supposed that Congress would act in any other than a liberal spirit.

My opinion, therefore, is, that the amount of the whole money and other funds received by the agent of the United States, under the act of July 1st, 1836, without reduction, constitute the Smithsonian fund, for the purposes specified in said Smithson's will; and that the whole expenses of prosecuting said claim, receiving, and transporting the same to this country, including any additional expenses which may have been incurred here, ought to be defrayed out of the appropriation made by Congress.

It appears that cash and stocks, which, when converted into money, amounted to £106,490 11s. 9d., were decreed to the United States, as the amount of the legacy and bequest in said will. This sum, after deducting £116 2s. 2d., the amount of costs refunded, is the amount which should be paid to the Treasurer of the United States, to be kept and disposed of according to the provisions of the act of July 1, 1836, and the sixth section of the act of July 7, 1838; and all expenses, of whatever kind or nature, should be paid out of the appropriation made by Congress.

In relation to the disposition of the other personal effects of Mr. Smithson, which have been transferred to this country by the agent of the United States, my opinion is, that Congress should direct the disposition of them.

I have the honor to be, sir, your obedient servant,

FELIX GRUNDY.

Hon. LEVI WOODBURY,

Secretary of the Treasury.

BEQUEST OF JAMES SMITHSON.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES.

Upon the subject of the bequest of James Smithson to the United States.

DECEMBER 10, 1838.

Read, and referred to a select committee.

WASHINGTON, December 6, 1838.

To the House of Representatives of the United States :

The act of the 1st July, 1836, to enable the Executive to assert and prosecute with effect the claim of the United States to the legacy bequeathed to them by James Smithson, late of London, having received its entire execution, and the amount recovered and paid into the Treasury having, agreeably to an act of the last session, been invested in State stocks, I deem it proper to invite the attention of Congress to the obligation now devolving upon the United States to fulfil the object of the bequest. In order to obtain such information as might serve to facilitate its attainment, the Secretary of State was directed, in July last, to apply to persons versed in science, and familiar with the subject of public education, for their views as to the mode of disposing of the fund best calculated to meet the intentions of the testator, and prove most beneficial to mankind. Copies of the circular letter written in compliance with these directions, and of the answers to it received at the Department of State, are herewith communicated, for the consideration of Congress.

M. VAN BUREN.

DEPARTMENT OF STATE,

December 6, 1838.

The Secretary of State has the honor to report to the President copies of the circular letter written by his directions, in relation to the mode of carrying into effect the provisions of the Smithsonian bequest, and of the answers to it received at the Department of State.

JOHN FORSYTH.

To the PRESIDENT.

DEPARTMENT OF STATE,

Washington, July 19, 1838.

Hon. JOHN QUINCY ADAMS:

SIR: By the will of James Smithson, late of London, deceased, property to a considerable amount was bequeathed to the United States, for the purpose, as expressed in the language of the will, of "founding at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."

The United States having, under the authority of an act of Congress, approved the 1st of July, 1836, accepted the legacy, pledged their faith for the performance of the trust, in such manner as Congress may hereafter direct, and recovered the proceeds of the bequest, to the amount of about one hundred thousand pounds sterling, the President is anxious, in presenting the subject to Congress for their consideration and action upon it, to aid his judgment by consulting the views of persons versed in science and in matters relating to public education, as to the mode of applying the proceeds of the bequest, which shall be likely at once to meet the wishes of the testator, and prove most advantageous to mankind.

The President will be pleased to have, if agreeable to you to give it, the result of your reflections on the subject, communicated through this Department, at as early a day as convenient.

I am, sir, very respectfully, your obedient servant,

JOHN FORSYTH.

Same letter addressed to—

THOMAS COOPER, South Carolina.

RICHARD RUSH, Philadelphia.

Professor FRANCIS WAYLAND, Providence, Rhode Island.

ALBERT GALLATIN, New York.

Rev. STEPHEN OLIN, Boynton, Virginia.

PHILIP LINDSLEY, Nashville, Tennessee.

Professor DAVIS, Charlottesville, Virginia.

QUINCY, October 8, 1838.

SIR: I duly received your letter, dated in July last, expressing the desire of the President of the United States to consult the views of persons versed in science and in matters relating to public education, as to the modes of applying the proceeds of the Smithsonian bequest, to meet the wishes of the testator, and which may prove most advantageous to mankind, with a view to present to Congress the subject, for their consideration, and action upon it.

Having been the chairman of the committee of the House of Representatives, and reporter of the bill which became the act of July 1, 1836, relating to this bequest, in which act the faith of the United States is pledged for the application of the funds, placed by the founder of this institution at their disposal, to the promotion of the great object of his munificence, *the increase and diffusion of knowledge among men*. I have waited with anxious expectation the consummation of the first requisite for the accomplishment of the purpose, the recovery of the fund itself, aware that, until that should be effected, all speculation upon the

most suitable appropriation of the proceeds would be premature. It is with the warmest satisfaction that I have learnt the successful attainment of this preliminary end.

When, at the last session of Congress, provision was made, by the sixth section of an act making appropriations for the West Point Academy for the temporary investment of the Smithsonian bequest, I regretted, first, that this provision was made not in a separate bill, but as an appendage to one with which it had no proper connexion; secondly, that the investment should be directed in stocks of States; and, thirdly, that it should give to the Secretary of the Treasury a discretionary power to invest the fund, at a yearly interest of five per cent., at the very time when the Government itself of the United States was issuing Treasury notes at the rate of six per cent. Whatever may have been the occasion or the design of these arrangements, it was impossible to evade the remarks, that here was a deduction of one per cent. a year from the free gift of a noble-minded foreigner, for the most exalted of purposes, to bestow it, at the discretion of the Secretary of the Treasury, upon some favorite *State*. This did not appear to me to be an appropriation of the fund to the increase and diffusion of knowledge among men, nor did it lead me to augur very well of the sequel.

This, however, was but a temporary investment of the fund, which, I was willing to hope, would under no consideration be made permanent. In the report of the committee to the House of Representatives, accompanying the bill which authorized the President to take the necessary measures for recovering the fund, I had set forth, in very explicit language, my sense of the *duties* which devolved upon the Government of the United States by their acceptance, in behalf of the nation, of this bequest; and, with the same views, I introduced into the bill a pledge of the faith of the United States, that the fund should be applied to the generous purpose of the testator.

Before leaving Washington last July, I took the liberty of calling upon the President, and of expressing to him my earnest hope that, in the interval before the next session of Congress, he would be prepared with some plan for the permanent safe keeping and security, *unimpaired*, of the fund itself, by an investment which would yield a certain income as large as the ordinary interest of the country, and for appropriating that income to the object of the testator—the increase and diffusion of knowledge among men.

I was kindly received by the President, who assured me of his readiness to take into consideration any suggestions which I might be disposed to make on the subject, or those of any other person whom I might recommend.

Thus encouraged, I gave him freely the views which I entertained with regard to fixing the permanency of the fund, *unimpaired*, and to suitable objects of application for its *annual income*. The opinions which I gave were general, and of course not matured. Further reflection since that time has but slightly modified them, and I have not since had the opportunity of consulting with any person in my own judgment qualified to give counsel, at once judicious and *perfectly disinterested*, for the disposal of the fund.

The provision made at the last session of Congress was made merely for an investment for a few months, that the fund should, after the arri-

val of the money in this country, not remain unoccupied, even until the next session of Congress. The object now first deserving attention will be to secure the permanency of the fund *entire* ; for which purpose, I must indulge the hope that it will not be intrusted to *any* bank, nor loaned upon *any* pledge of State stocks.

I should greatly prefer that it should be disposed of as was the fund of one hundred thousand dollars which had been held by the President of the United States, in trust for an annuity of six thousand dollars, payable to the Seneca Indians. By the act of February 19, 1831, the whole fund was placed to the credit of the Department of War, and the duty of making the annual payment to the Seneca tribe was assigned to the Secretary. In the present case, the whole fund might pass to the credit of the Treasury of the United States, and the annual payment be directed to be made by the Secretary of the Treasury. The fund of course to be redeemable at the discretion of Congress, and otherwise invested for the objects of the institution.

This would give an annual appropriation of 30,000 dollars, and, to keep the fund permanently unimpaired, the annual appropriation should be confined to that sum.

I think that no part of the money should be applied to the endowment of any school, college, university, or ecclesiastical establishment ; to no institution for the education of youth, for that is a sacred obligation, binding upon the people of this Union themselves, at their own expense and charge, and for which it would be unworthy of them to accept an eleemosynary donation from any foreigner whomsoever. Nor do I believe it to have been strictly within the intention of the testator. For the immediate object of the education of youth is not the increase and diffusion of knowledge among men, but the instruction of children in that which is already known. Its result is doubtless to diffuse, and may be to increase, knowledge among men ; and so is apprenticeship to trades, and so is the tillage of the ground, and so was to the ancient shepherds of Egypt and Chaldea the nightly keeping of their flocks, for it enabled them, by the habitual observation of the stars, to trace their courses to some of the sublimest discoveries of astronomy.

Nor could the application of the fund to any ecclesiastical or religious establishment be a proper fulfilment of the testator's intention. The people of the United States have also religious duties to perform, for the charge and discharge of which they should not consent to be tributary, even in gratitude, to the bounty of any foreigner. The preaching of the gospel, like the education of youth, promotes the increase and diffusion of knowledge ; but the worship of God, and the fulfilment of moral duties to man, the special object of religious institutions, do not so much import the increase of knowledge as the right use of what is known.

I suggested to the President that annual courses of lectures on the principal sciences, physical and mathematical, moral, political, and literary, to be delivered not by permanent professors, but by persons annually appointed, with a liberal compensation for each course, were among the means well adapted to the end of increasing and diffusing knowledge *among men*.

But the great object of my solicitude would be to guard against the canker of almost all charitable foundations—jobbing for parasites, and sops for hungry incapacity. For the economical management of the fund,

and the periodical application of it to appropriate expenditures, it should be invested in a board of trustees, to consist partly of members of both Houses of Congress, with the Secretaries of the Departments, the Attorney General, the mayor of the city of Washington, and one or more inhabitants of the District of Columbia, to be incorporated as trustees of the Smithsonian fund, with a secretary and treasurer in one person, and to be the only salaried person of the board; to be appointed for four years, and be capable of reappointment, but removable for adequate cause by a majority of the board. Into details it is unnecessary to enter.

The first object of appropriation, however, in my judgment, should be the erection of an astronomical observatory, for all the purposes of the Greenwich Observatory, in England, and the *Bureau des Longitudes*, in France. This alone would absorb the annual income of the fund for seven years, and will form the subject of another letter.

I am, with great respect, sir, your very obedient servant,

JOHN QUINCY ADAMS.

JOHN FORSYTH, Esq.,

Secretary of State of the United States, Washington.

QUINCY, October 11, 1838.

SIR: I have reserved for a separate letter what I proposed to say in recommending the erection and establishment of an astronomical observatory at Washington, as one and the first application of the annual income from the Smithsonian bequest, because of all that I have to say I deem it by far the most important, and because having for many years believed that the national character of our country demanded of us the establishment of such an institution, as a debt of honor to the cause of science and to the world of civilized man. I have hailed with cheering hope this opportunity of removing the greatest obstacle which has hitherto disappointed the earnest wishes that I have entertained of witnessing, before my own departure for another world, now near at hand, the disappearance of a stain upon our good name, in the neglect to provide the means of increasing and diffusing knowledge among men, by a systematic and scientific continued series of observations on the phenomena of the numberless worlds suspended over our heads—the sublimest of the physical sciences, and that in which the field of future discovery is as unbounded as the universe itself. I allude to the continued and necessary *expense* of such an establishment.

In my former letter I proposed that to preserve entire and unimpaired the Smithsonian fund, as the principal of a perpetual annuity, the annual appropriations from its proceeds should be strictly confined to its annual income. That, assuming the amount of the fund to be five hundred thousand dollars, it should be so invested as to secure a permanent yearly income of thirty thousand; and that it should be committed to an incorporated board of trustees, with a secretary and treasurer, the only person of the board to receive a pecuniary compensation from the fund. •

On the 18th of March, 1826, Mr. C. F. Mercer, chairman of a select committee of the House of Representatives of the United States, reported to that House a bill for the erection of a national observatory at the

city of Washington, together with sundry documents containing estimates of the cost of erecting the buildings necessary for such an establishment, for the instruments and books which it would require, and for the compensation of a principal astronomer, two assistants, and two attendants. These estimates of expense were, however, prepared upon the principle of providing the establishment at the smallest possible expense—to which end it was proposed that it should be attached to the Engineer's office, in the Department of War, and that the mathematical and astronomical instruments already belonging to that Department should be transferred to the use of the observatory. All this must of course be otherwise arranged, if the President and Congress should approve the proposal of establishing the observatory on the Smithsonian foundation. But that document contains much valuable information, which may be made available whenever an observatory shall be erected. It is No. 124, House documents of the first session of the 19th Congress.

In the estimate of expenses at that time, by the Chief Engineer, he assigned for the necessary buildings only 14,500 dollars. But as it is desirable that the principal building, the observatory itself, should be, for the purposes of observation, unsurpassed by any other edifice constructed for the same purposes, I would devote one year's interest from the fund to the construction of the buildings; a second and third, to constitute a fund from the *income* of which the salaries of the astronomer, his assistants and attendants, should be paid; a fourth and fifth, for the necessary instruments and books; a sixth and seventh, for a fund from the income of which the expense should be defrayed of publishing the ephemeris of observations, and a yearly nautical almanac. These appropriations may be so distributed as to apply a part of the appropriation of each year to each of those necessary expenditures; but for an establishment so complete as may do honor in all time alike to the testator and his trustees, the United States of America, I cannot reduce my estimate of the necessary expense below two hundred thousand dollars.

My principles for this disposal of the funds are these:

1st. That the most complete establishment of an astronomical observatory in the world should be founded by the United States of America; the whole expense of which, both its first cost and its perpetual maintenance, should be amply provided for, without costing one dollar either to the people or to the *principal* sum of the Smithsonian bequest.

2d. That by providing from the *income* alone of the fund, a supplementary fund, from the *interest* of which all the salaries shall be paid, and all the annual expenses of publication shall be defrayed, the fund itself would, instead of being impaired, accumulate with the lapse of years. I do most fervently wish that this principle might be made the fundamental law, now and hereafter, so far as may be practicable, of all the appropriations of the Smithsonian bequest.

3d. That, by the establishment of an observatory upon the largest and the most liberal scale, and providing for the publication of a yearly nautical almanac, knowledge will be diffused among men, the reputation of our country will rise to honor and reverence among the civilized nations of the earth, and our navigators and mariners on every ocean be no longer dependent on English or French observers or calculators, for the tables indispensable to conduct their path upon the deep.

In the document to which I have above referred, there is a letter from

Mr. de Wallenstein, then attached to the Russian legation in this country; a report from Major Kearney, of the topographical engineers; and extracts from a memoir of Mr. Francis Baily, respecting a new method of determining the longitude; all of which contain precious information, both of facts and of encouragement to the application of a strenuous and persevering effort, on the part of the Government of the United States, to contribute their effective aid, by this establishment, to the progress of physical and mathematical science. When the opportunity for this is afforded by the munificence of a foreigner, without needing the taxation of a dollar upon the people, I cannot forego the hope that this opportunity will not be lost, believing that, of all the physical sciences, there is none for the cultivation of which brighter rewards of future discovery are reserved for the ingenuity and industry of man, than practical astronomy.

There is appended to the same Congressional document a memorial to Congress, from William Allen, president of Bowdoin College, and sundry other distinguished citizens of the State of Maine, praying for the establishment, at the charge of the nation, of an astronomical observatory in the town of Brunswick, in that State; and a memorial of Mr. Hassler, recommending two observatories—one in Maine and one in Louisiana. The memorial from Maine urges with great force and elegance some of the general considerations pointing to the usefulness and importance of an astronomical observatory in the western hemisphere. But it is doubtful, at least, whether any application of the Smithsonian bequest can, in fulfilment of the testator's will, be located otherwise than in the city of Washington; and if hereafter Congress should ever be disposed to appropriate any portion of the national funds to these elevated purposes, observatories may be erected in Maine, or Louisiana, or both, which may be auxiliary to the labors of the Smithsonian institution at Washington, without in any manner interfering with its pursuits.

If the President should approve and give the weight of his recommendations to those suggestions, I have no doubt they will receive the sanction of Congress at their next session. As I propose the appropriation for seven successive years of all the income from the fund to this special object, there will be ample time for considering the best manner of appropriating the same income afterwards to permanent establishments for *increasing and diffusing knowledge among men*. Nothing could be more easy than to dispose of a fund ten times as large, without encroaching upon the proper sphere of any school, college, university, or academy. Not so easy will it be secure, as from a rattlesnake's fang, the fund and its income, forever, from being wasted and dilapidated in bounties to feed the hunger or fatten the leaden idleness of mountebank projectors, and shallow and worthless pretenders to science.

Since I began this letter, I have conferred with Mr. Bancroft, the collector of the customs at Boston, concerning its object, who has promised to communicate his views of the subject to the President. I may, perhaps, after consultation with others, again address you in relation to it before my departure for Washington.

I am, very respectfully, sir, your obedient servant,

JOHN QUINCY ADAMS.

JOHN FORSYTH, Esq.,

Secretary of State of the United States, Washington.

PROVIDENCE, October 2, 1838.

SIR: In reply to your communication dated July last, requesting my views respecting the Smithsonian Institute, I beg leave to state as follows:

1. It is, I suppose, to be taken for granted, that this institution is intended for the benefit not of any particular *section* of the United States, but for the benefit of the whole country; and, also, that no expense, which may be necessary in order to accomplish its object will be spared.

2. I think it also evident, that there is no need, in this country, of what may be properly termed *collegiate* education; that is, of that education which may be given between the ages of fourteen or sixteen, and eighteen or twenty. All the old States, and many of the new ones, have as many institutions of this kind as their circumstances require. And, besides, since persons of the ages specified are too young to be, for a long period, absent from home, it is probably better that a large number of such institutions should be established within convenient distances of each other. The age of the pupils in these institutions would also render it desirable that very large numbers be not associated together.

3. It is probable that professional schools—that is, schools for divinity, law, and medicine—will be established in every section of our country. Divinity must be left to the different Christian sects; law will probably be taught in the State, or at least the district, in which it is to be practised. The same will, I think, be true of medicine.

4. If the above views be correct, it will, I think, follow, that the proper place to be occupied by such an institution would be the space between the close of a collegiate education and a professional school. Its object would be to carry forward a classical and philosophical education beyond the point at which a college now leaves it, and to give instruction in the broad and philosophical principles of a professional education.

The demand for such instruction now exists very extensively. A very considerable portion of our best schools now graduate as early as their nineteenth, twentieth, or twenty-first year. If they are sufficiently wealthy, they prefer to wait a year before studying their profession. Some travel, some read, some remain as resident graduates, and many more teach school for a year or two, for the purpose of reviewing their studies. These would gladly resort to an institution in which their time might be profitably employed. The rapidly increasing wealth of our country will very greatly increase the number of such students.

The advantages which would result from such an institution are various. It would raise up and send abroad in the several professions a new grade of scholars, and thus greatly add to the intellectual power of the nation. But, specially, it would furnish teachers, professors, and officers, of every grade, for all our other institutions. As the standard of education was thus raised in the colleges, students would enter the national university better prepared. This would require greater effort on the part of its professors, and thus both would reciprocally stimulate each other.

The branches which should be taught there, I suppose, should be the same as in our colleges, only far more generously taught—that is, taught to men, and not to boys—and the philosophical principles of law and medicine. This would embrace lectures on Latin, Greek, Hebrew, and the

oriental languages ; all the modern languages of any use to the scholar, with their literature ; mathematics, carried as far as any one would desire to pursue them ; astronomy ; engineering, civil and military ; the art of war, beginning where it is left at West Point ; chemistry ; geology ; mining ; rhetoric and poetry ; political economy ; intellectual philosophy ; physiology, vegetable and animal ; anatomy, human and comparative ; history ; the laws of nations ; and the general principles of law, the constitution of the United States, &c.

5. Supposing such an institution to be established, something may be added respecting the mode of its constitution and organization.

I suppose, then, that an institution of this kind is a sort of copartnership between the instructors and the public. The public furnish means of education, as building, libraries, apparatus, and a portion of the salary. The professors do the labor, and provide for the remaining part of their income by their own exertions. Hence there arises naturally a division of the powers and duties of the parties. To the corporation, or governors, or trustees, or by what name they may be called, would belong the management of the fiscal concerns of the institution, and the control of that portion of its affairs which depended specially upon its relation with the public donation. The government of the institution, the conferring of degrees, the appointment of professors, would be performed jointly by the officers of instruction and the corporation.

In the English universities, the government of the institution is vested in a general meeting of the former graduates. This forms a literary public, which exercises ultimate jurisdiction in most matters which require deliberation. How far such an institution might be constructed upon this principle, may be fairly a question.

6. If the above-mentioned views should be adopted, it will be perceived that no funds will be required for dormitories. The young men will provide for themselves board and lodging wherever they please, and the professors will be responsible for nothing more than their education. It is supposed that they are old enough to govern themselves.

Hence the funds may be devoted to the following purposes :

1st. A part would be appropriated to the creation of a library, cabinets, and for the furnishing of all the apparatus necessary to the instructors.

2d. A part to the erection of buildings for the above purposes, together with buildings for professors' houses.

3d. A fund would be established for the endowment of professorships, giving to each so much as may form a portion, say one third or one half, of his living, and the rest to be provided for by the sale of the tickets to his courses.

7. If the institution is governed by a board, this board should be appointed by the President and Senate, or by the President alone, and they should hold their office for no longer a period than six years, one third of them retiring, unless reappointed, every two years.

8. Graduates of the university should be allowed to teach classes and receive payment for tickets, upon any of the subjects on which instruction is given in the regular course. This will prove a strong stimulant to the regular professors, and will train men up for teachers.

Degrees should never be conferred as a matter of course, but only after a strict and public examination. They should never be conferred either in course, or *causâ honoris*, unless by the recommendation of the faculty.

I have thus very briefly, but as far as my avocations would allow, thrown together a few hints upon the subject to which you have directed my attention. That I should go into detail, I presume, was not expected. Whatever may be the plan adopted, I presume it will not be carried into effect until an extensive observation of the best universities in Europe has furnished the Government with all the knowledge which the present condition of the science of education can afford.

I have the honor to be, sir, respectfully, your obedient servant,
F. WAYLAND.

Hon. J. FORSYTH,
Secretary of State.

COLUMBIA, SOUTH CAROLINA,

July 20, 1838.

SIR: With respect to the Smithson legacy, two courses only suggest themselves to my mind: one, annual premiums for the best treatises on given subjects, which we have not literary or scientific men enough to supply or to enter into any thing like competition with the Bridgewater Treatises; and, therefore, we should only be disgraced by it; and, therefore, I cannot recommend this mode of application. Add to which, it would be very apt to degenerate into a political and party institution, in various ways. The other is an institution of the character of an university. I am well aware the power of erecting an university was twice refused to Congress, in the convention of 1787. But the objection may be gotten over by transferring the donation to the corporation of Georgetown, under such limitation as may be expedient and constitutional, and let an university be instituted by that corporation. This would be a sufficient approximation to Mr. Smithson's required locality, and would obviate the constitutional objection.

Such an university ought not to be opened, except to graduates of other colleges. The studies might be the higher algebraical calculus; the application of mathematics to practical mechanical knowledge of every description, and to astronomy, to chemistry, electricity, and galvanism; the principles of botany and agriculture. No Latin or Greek; no mere literature. Things, not words.

Strict attendance; strict and public examinations. I object to all *belles-lettres*, and philosophical literature, as calculated only to make men pleasant talkers. I object to *medicine*, which cannot be well taught in a locality of less than 100,000 inhabitants.

I object to *law*; for all that can be orally delivered can be more profitably and deliberately learnt by perusal. *Ethics* and *politics* are as yet unsettled branches of knowledge.

Whether physiology and political economy ought to be rejected, requires more consideration than I can at this moment bestow. I want to see those studies cultivated, which, in their known tendencies and results, abridge human labor, and increase and multiply the comforts of existence to the great mass of mankind. Public education should be useful, not ornamental.

The course should not be less than 3 years, of 10 months each. The instruction afforded gratis; examinations for admission rigid. Such, in

few words, are my notions on this subject, which I respectfully submit, sir, to your better judgment.

Accept, I pray you, the assurances of my sincere and high consideration.

THOMAS COOPER, *M. D.*

SYDENHAM, NEAR PHILADELPHIA,

November 6, 1838.

SIR: Referring to your letter of July, the receipt of which I had the honor to acknowledge, and desiring now to meet the wishes it conveys, however sincerely distrustful I am of myself in attempting the task, I proceed to remark: that a university or college, in the ordinary sense, or any institution looking to primary education, or to the instruction of the young merely, does not strike me as the kind of institution contemplated by Mr. Smithson's will; declaring it, in language simple, yet of the widest import, to be "for the increase and diffusion of knowledge among men," and making the United States the trustee of his intentions, it seems to follow that it ought to be as comprehensive as possible in its objects and means, as it must necessarily be national in its government. In turning my thoughts to the subject, it is, therefore, only upon a basis the most comprehensive, under all views, that I can think of any general plan for its organization. Hence it appears to me:

1. That even officers of the United States, abroad and at home, might be made subservient to some of the main objects of the institution—as their consuls, naval and military officers; and, I would add, their foreign ministers.

Consuls, by their residence in foreign ports, have opportunities of becoming acquainted with the natural history and productions of the places where they reside, and learning other things useful to be known. This class of officers had instructions, at a former period of the Government, to send home seeds, plants, and other productions, beneficial to agriculture, manufactures, or any of the useful arts. But their efforts were frustrated or impeded for want of a fund to defray incidental expenses, which, however small, constitutional scruples existed against providing. The Smithsonian fund might supply the means of renewing such instructions, giving to them more scope as well as efficacy.

Our naval officers, those especially in separate commands on foreign stations, must have opportunities of gaining knowledge in other spheres than those to be filled by their usual reports to the Navy Department; and the same may be said of officers of the army, in regard to the War Department. Many of the latter, by their stations at garrisons, or employment otherwise in remote and unexplored parts of our country, have the means, as past instances testify, of collecting facts bearing upon its geology, its natural history in all branches, its antiquities, and the character of its aboriginal races; the communication of which might advantageously fall in with the purposes of this institution, and be ultimately promulgated through its instrumentality.

I propose to include, also, ministers plenipotentiary among the functionaries who might serve the institution, and, through it, the general public, on this occasion. By their power of commanding the best intercourse in the several communities to which they are sent, they may open

to themselves avenues to knowledge of all kinds; the transmission of which to the institution, under executive instructions to that effect, might often prove of high value. It would not be expected from them but at convenient intervals, and never when interfering with their primary duties. When an appropriate channel was opened for receiving communications of this nature, they would become, it may be presumed, an agreeable appendage to the primary duties of our ministers, affording a resource for their leisure, with opportunities of a more enlarged usefulness to their country, and fame to themselves. Permanent missions were once objected to by Mr. Jefferson, as not within the true theory of our foreign intercourse, which seems to countenance the more a proposal for connecting with them the honorable appendage suggested, since neither official dignity nor usefulness can ever be impaired, though both may be heightened, by coassociation with knowledge in other fields.

2. A building to be erected at Washington, with accommodations for the business of the institution. Ground to be attached to it, sufficient for reproducing seeds and plants, with a view to diffusing through the country such as might be found to deserve it. The officers of the institution to be a director, a secretary, a librarian, and a treasurer. Persons to be under them to take care of the building and grounds. The officers to be appointed by the President and Senate. The director to make an annual report to Congress on the state of the institution, and oftener if necessary. Its affairs to be subject to the visitation of the President, aided by a standing board, to consist of the chief officers of the Government, say, taking the example of a law already in the statute book in relation to the finances, the Vice President, the Chief Justice, the Secretaries of State and the Treasury, and the Attorney General. The institution to have its press, as the University of Oxford, or otherwise authority to employ one for printing communications sent to it, and the lectures to be presently mentioned. Nothing to be printed but under the sanction of the director and standing board of visitors. To this and other ends, for the good government of the institution, the standing board to have the right to call in the assistance of three or more scientific or literary persons unconnected with it. The profits arising from all publications to go in aid of the funds of the institution. Communications from learned societies, or from individuals eminent in science or letters, in whatever part of the world, to be received by the director, and taken charge of by the secretary. The director to be authorized to correspond with any such societies or persons. A council to assemble once a month, to consist of the officers of the institution and the lecturers attached to it, before which all communications to be laid. Order to be then taken upon them. Such as go upon the archives, with a view to the question of publication, to be brought under the consideration of the standing board of visitors at the proper time, when that question will be decided. The director to preside at these councils, at the meetings of the standing board of visitors, and at all other meetings required by the business of the institution; and the Secretary to keep the minutes. The standing board of visitors to hold stated meetings twice a year, and assemble on other occasions when they deem it necessary. At the commencement of the institution, the duties of librarian and treasurer to be united in the same person.

3. Lectureships to be established, comprehending as many of the

leading branches of physical and moral science as the funds of the institution may be able to bear. Apparatus to be provided for the branches requiring it. One of the lectureships to be dedicated to government and public law. When conflicting opinions on government are raging in the world, to have the democratic principle, as modified by our systems of representation, and the conjoint workings of the federative and national principle, illustrated in elementary disquisitions, apart from temporary topics and passions, is a desideratum which the Smithsonian Institution might supply. Such productions seem due to mankind, as to ourselves, imperfectly described as our institutions have been, through adverse feelings in the writers; it having generally fared with us as the cause of Roman liberty fared in the hands of royal historians. Rarely can foreigners, however enlightened, be equal to the task of justly analyzing the complicated movements, unintelligible to hasty observers, yet full of harmony, that maintain the order, prosperity, and freedom, of this great confederated republic, under guards combining the efficacy of popular sovereignty with its safety. Authentic explanations of them, all issuing from this institution, at an age when steam is quickening all intercourse throughout the world, would give new motives for listening to the doctrines and results of the democratic principle in this hemisphere. So expounded, it would go before the world without disparagement, and be fairly judged by its results. Under public law, the tenets of America, now locked up in diplomacy, or otherwise hidden or overlooked in Europe, might come into useful publicity; her proposals to Europe to abolish privateering, and prohibit public ships from capturing merchant vessels upon the ocean, thus forever stripping war of more than half its evils upon that element—a stride in civilization to transcend, whenever it may be made, the West India abolition act; her resistance, single-handed, against the enforcement of British municipal law upon the ocean, as seen in the individual miseries and national violations involved in the feudal claim of impressment, and her desire, shown in other ways, for freeing the international code from barbarous relics, whereby this institution, working in its orbit of calm discussion, might become the ally of America towards gaining for these great public benefactions, and others, the growth of our institutions, in our days, (so maligned for retaining the domestic servitude bequeathed to them by our progenitors,) favor and acceptance among nations. The steady abhorrence expressed by this Government against employing savages in warfare between civilized and Christian States, and its abortive negotiations to prevent it, would further illustrate the harmonizing policy of America. Such are samples of the maxims that might claim elucidation from an institution reared under the sanction of this republic, and thence, by the principle of its existence, desirous of doing justice to them, examined in juxtaposition with those taught in the ancient and cloistered seminaries of the old world, and upheld by its Governments.

The other lectureships, as the foregoing, might be made to yield, each in its proper field, contributions to “the increase and diffusion of knowledge among men.” I am aware that voluntary lectureships have not always been found to succeed. But in the foundation of these, considering the time and all concomitant circumstances, there seems reasonable ground for anticipating success. The plan would imply that the lecturers be also appointed by the President and Senate. It would imply that

their salaries be ample enough to command the best men, and admit of the exclusive devotion of their time to the studies and investigations of their posts. They might even be laid under the restriction of not engaging in other pursuits, as our laws interdict the revenue officers from trading. Genius being of all countries, and the intentions of the founder peculiarly expanded, the range of our own and other countries would be open for selecting the incumbents. The desire of fame, increased by the hope of their lectures being published, might be expected to stimulate them to exertion; and if incentives so high were wanting, the tenure of their appointments, where the Executive and public eye would be upon them, would act as a guard against slackness in their duties. If knowledge is power, power, directing knowledge, may make it efficacious. The place where the lectures were delivered would impart to them interest and dignity. If delivered when Congress was in session, and not recurring too often, some of the members might be expected occasionally to attend; as a change from the turmoil of politics, and possibly a good influence on legislation itself, might grow out of these new intellectual elements gathering about its precincts. To the public functionaries of all sorts, to distinguished foreigners, and to visitors at Washington, as well as its resident inhabitants, the Smithsonian lectures might prove attractive. It will have been their lot, if established, to spring up when stupendous agents in nature, and new contrivances in art, are changing the state of the world, in peace and for war; when this country is taking a conspicuous share in these magnificent innovations, which some of the lectures would doubtless treat of, and when the successful results of its popular institutions hitherto are among the causes at work in modifying the political and social condition of other nations. Can it be that, delivered under such circumstances, they would be devoid of interest? Centring in the capital of the Union, to which the eyes of the States are apt to turn with a curiosity both natural and ambitious, may not these lectures do their part also, if recommended by ability, towards raising up among us new homage to mental accomplishments and renown, those memorials of a nation's glory, when others perish?

Each lecturer, at the conclusion of his course, to deposit with the director a copy of his lectures. These to be published, or not, as determined by the board of visitors. Hence, if the audience in the lecture-rooms proved, after all, to be inconsiderable, the publication of the lectures, when of merit to authorize it, would be fulfilling the intentions of the founder, and the prospect of publication be sufficient to keep up the spirit of the lecturer. We have heard of the Bridgewater Treatises, in England, emanating from the provisions of a munificent will. Perhaps it might not be too sanguine to anticipate, in good time, from the Smithsonian lectures, disquisitions doing honor to their authors, and, let it be hoped, to their country, whilst diffusing knowledge among men every where. We have seen, also, the publications that issue from those recently formed associations that hold their annual meetings in Europe, and seem to have made science a fashion there, enrolling statesmen, and nobles, and kings, among its votaries. May not the Smithsonian Institution mark an occasion for our country to start in this rivalry of mind? The race among nations is going on, of wealth, of power, and of science; the two first extending as the last extends. An immense achievement, which the present year has finally witnessed, the crossing of the Atlantic by

steam, is a revolution in human affairs. Distance, once an element in our safety, as in all our relations with the old world, and the basis on which rested essential maxims in our policy, has disappeared. Europe has suddenly become neighbor to us, for good and for evil, involving consequences that baffle all foresight. Our statesmen must wake up to the mighty change. There is no time to lose. They will have to ask themselves what are the parts of our policy to be accommodated to the change. Our men of science, feeling new excitements from this approximation of the hemispheres, will naturally be on the alert, growing more emulous in their several fields. The continent that Columbus found was a desert, or overspread with barbarous people and institutions. The continent that steam has found teems with civilization, fresh, advancing, and unavoidably innovating upon the old world. The statesmen, the warriors, the active and enterprising men, the whole people of the two worlds, now almost confront each other. It is at such a point in the destinies of America that the Smithsonian Institution comes into being. By their physical resources and power, the United States are well known. Their resources of intellectual and moral strength have been more in the back ground; but may not an auspicious development of them be aided by an institution like this, rising up in their capital simultaneously with this new condition of things, guarded, as it will be, by the annual watchfulness, fostered by the annual care, and improved, from time to time, by the superintending wisdom of Congress?

The usefulness of the institution would doubtless be increased, if young men could be regularly educated at it. But here imperious obstacles seem to interpose. If I only, in conclusion, touch this part of the plan, without dilating upon it, it is from a fear that the fund would not bear their maintenance, in connexion with what has seemed to me other indispensable objects. Perhaps a limited number who had passed the age of 18, taken equally from the different States, say two from each, under the federative principle, might come to the institution, be formed into a class, and attend its lectures for a couple or three courses; their expenses to be paid under such restrictions as the Government might prescribe, and the young men to undergo public examinations at the end of the term, prize medals being awarded by the board of visitors or a committee of Congress, to keep the tone of ambition high. But would the fund bear even this? Again, I fear not.

In the foregoing suggestions as to the nature of the institution, sent to you in compliance with the President's call, I have confined myself to a very general outline and a few reflections. The subject has many aspects, and I have dealt only with some of them, and those partially. It is intrinsically one on which much diversity of opinion may be expected to prevail, and that hardly any discussions could exhaust. However honored by the President's call, and desirous of responding to it adequately, I have felt incompetent to the task of going into the arrangements in detail necessary to the complete organization of an institution, designed by its philanthropic founder to be so universal in its scope, so far-reaching in its benefits. It ought to have all the simplicity compatible with its ends; but these are momentous, since they may run, by their effects, into distant ages. It is like a new power coming into the republic—its means the human mind; its ends still the triumphs of the mind; its fields of glory beneficent and saving—a power to give new force to

the moral elements of our institutions, helping to illustrate, strengthen, and adorn them. Such, in my humble conception, it is, or may be made. Even as to the brief outline I venture upon, for the plan of such an institution, I must repeat how greatly I distrust myself, sketched, as it has been, without consultation with others, giving their thoughts to the same subject, who might have corrected, modified, and improved, my own. If any of these can be turned to the least profit in abler hands, or serve to start better ones in better minds, I shall be amply rewarded.

I beg to add that this communication would have been sooner sent to you, but for interruptions incident to the first month or two after returning to my home after a two years' absence.

With great respect, I have the honor to be your obedient servant,

RICHARD RUSH.

COLLEGE HILL, D. C.,

November 26, 1838.

SIR: In an interview I had with you some time since, you desired me to express my views respecting the anticipated Smithsonian Institution. I will therefore attempt to do so, though conscious of my inability to do justice to a subject so important in its character and relations. If it be wisely organized, and supplied with a corps of distinguished professors in the various departments of learning, it will affect not only the highest interests of our country, but its influence will be felt in foreign lands. Let it go up in a character worthy of its liberal founder, let it be sustained with the zeal and liberality becoming the object and our own reputation, and it will add to our national points of union: in these we are not very rich, and, therefore, should be glad to multiply them, to bind together more firmly the elements of the American confederation. The object of the contemplated institution is "the cultivation and diffusion of knowledge among mankind." This object, I believe, is distinctly expressed in the will of Mr. Smithson. In making his will, he probably had his eye upon those modern institutes and universities of Europe, which are designed, not to teach the first elements of science and letters, but to receive graduates, and men looking forward to professional eminence, for the purpose of advancing them to the highest grades of learning, and thus to give them power to enlarge the boundaries of knowledge, by fresh discoveries and investigations. We may conclude, then, that he intended his bequest should be applied to the erection of an institution for liberal and professional purposes, and for the promotion of original investigations—to carry scholars through a range of studies much above those of the ordinary collegiate course. I am happy to know that this is the opinion of John Quincy Adams, a gentleman whose judgment in the present case is entitled to all respect.

Admitting that this is to be its object, it is natural to inquire, in the next place, how it should be organized, so as most fully to promote this design. In organizing it, respect should be had to the spirit of the present age, to the genius of our Government, and to our peculiar wants as a nation. It is of vital moment that it should receive such a shaping as will best correspond with all the particulars. Many of the institutions of learning in Europe, in rigidly adhering to systems of government and instruction settled for ages, altogether different from our own, do not send forth men fitted to

meet the exigencies of modern society. Though richly endowed, and supplied with teachers of great powers and attainments, they serve for little else than to show the strength of the current that is setting by them. We, at this day, and especially in this country, need men who are acquainted with something better than the learning of the ancient schools, men who have studied profoundly the relation of scientific principles to practical purposes, and who can teach their fellow-men how to apply them in advancing the public welfare.

The general superintendence of the institution may be committed to a board of commissioners, appointed by Government, to hold their offices during good behaviour, and with power to perpetuate their existence. In this way, the institution would not only be free from the evils of frequent changes and political agitations, but would secure to itself, in the highest degree, the benefits of personal obligation. These commissioners would feel a deep sense of their responsibility, and that their powers and permanency in place were given to them that they might have the best opportunity to make the institution what it ought to be—a distinguished honor to their country, and a blessing to the world.

Let this board of commissioners procure the best men that can be found to fill the several professorships that may be instituted; and, in order to secure the services of men of the first powers and attainments, to lecture and conduct investigations in their appropriate departments, let their several means to facilitate their studies be ample, and their stated salaries liberal; and then its public course of lecturing will be most fully attended, numbers being allured both by the fame of the professors and the lightness of the fees. It was in consequence of high salaries that the the University of Gottingen, in the 18th century, rose to the first eminence in Germany.

As the funds are not now, nor are they likely to be for some time to come, sufficient to support professorships in the whole circle of science, it will be necessary to make a selection. The temptation will be to undertake too much. A few chairs, well filled and well sustained, would effect more than a number far greater than there are adequate means to support. In deciding upon the branches of knowledge to be taught, I would select those that would make the institution as much *American* as a regard for general science will allow. In addition to the ordinary professorships of law, of medicine, of the exact sciences, and physics, of classical literature, and of modern languages, &c., I would have one of the English literature, one of American history, one of American constitutional law and jurisprudence, one of American institutions, one of civil engineering and architecture, one of the practical application of the exact sciences to the mechanic arts.

You will perceive that I have said nothing about professorships in the department of metaphysics. I would rather leave the whole business of ethical and moral philosophy to be taught elsewhere, than to introduce it as a distinct course in a national institution of learning.

Some of the above professorships are of a local and novel character, but this, I trust, will not be urged as an objection against them. The achievement of our independence formed an epoch in the political world. Let, then, the institution of this, our first national university, form an epoch in the republic of science. Much might be said in recommending the branches appropriate to our country. They are such

as ought to be adopted, out of a regard to our reputation and to our present wants and future prospects. What have we done, as yet, to enrich and improve our own tongue? Besides, when we consider that the English language imbodyes, perhaps, richer treasures of science and literature than any other, and when we consider that it is spoken by two of the most commercial, enterprising, and powerful nations upon the earth—nations which are doing more than any other two that can be named, in forming colonies, and in diffusing knowledge and the light of Christianity—how powerful is the motive to cultivate and carry it to the highest state of refinement and power.

With regard to buildings, it may be remarked that it would be wisest to erect no more than are necessary for the library, the apparatus, a cabinet of minerals, collection of models, specimens, curiosities, &c., for the accommodation of the professors, when lecturing or engaged in their investigations. The scholars, instead of eating in common, might be accommodated in private boarding-houses. If this course be pursued, the interest which has accrued and which will accrue on the bequest, before the institution can be organized, will probably be sufficient to erect all the necessary buildings, and leave a handsome sum to be expended upon a library, apparatus, &c., so that the whole of the original donation may be invested for a permanent fund.

It will be of vital moment that the professors and students should be rich in the external means of knowledge—an extensive and well-chosen library, instruments, apparatus, models, specimens, &c. Especially would I recommend that there should be an astronomical observatory connected with the institution. The expense of this would not be very great, and the Government are already in possession of many of the requisite instruments. By such means, a meridian may be established, not only for our own country, but for the western continent. To this all our national surveys, our charts, &c., may be referred. Astronomical observations might be made, for which our position and climate offer peculiar advantages. There is now no observatory worth naming in this part of the world. Let, then, the American Government now build one, and it will not only be an honor to the nation, but it will be a powerful reason for giving permanency to the present seat of Government.

It may not be thought best to employ any artificial means for stimulants to rivalry, and to seek for literary honors. Congress will always have the right of visitation, and they can, if they please, direct the committee whom they may appoint to attend the stated examinations of the various classes, to award medals, or some other mark of distinction, to those scholars who shall give the best proof of proficiency, or the ablest essays on appointed subjects. But it should be remembered that the community at large constitute, in fact, the most efficient board of overseers, and that that institution will be the most honored and frequented, which sends forth the best prepared and the most faithful agents to meet the wants of their country.

I have the honor, sir, to be yours, with sentiments of great respect and esteem,

S. CHAPIN.

TO MARTIN VAN BUREN,
President of the United States.

FIRST REPORT

OF

THE SECRETARY OF THE SMITHSONIAN INSTITUTION

TO THE

BOARD OF REGENTS;

GIVING

A PROGRAMME OF ORGANIZATION, AND AN ACCOUNT OF THE OPERATIONS DURING THE YEAR.

PRESENTED DECEMBER 8, 1847.

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WASHINGTON:
RITCHIE & HEISS, PRINTERS.
1848.

REPORT.

GENTLEMEN: A statement of the financial condition of the Smithsonian Institution, and of the progress made in the erection of the building, having been presented to your board by the committees charged with the care of these objects, it becomes my duty, as Secretary of the institution, to give an account of what has been done relative to the development of the plan of organization, and of the steps which have been taken in the way of carrying it into operation.

In accordance with my instructions, I consulted with men of eminence in the different branches of literature and science, relative to the details of the plan of organization, and arranged the various suggestions offered, in the form of the accompanying programme. This, after having been submitted to a number of persons in whose knowledge and judgment I have confidence, is now presented to the board, with the concurrence of the Committee on Organization, for consideration and provisional adoption. I regret that my engagements have been such as to render it impossible for me to call upon many persons whose counsel would have been valuable, but I hope hereafter to avail myself of their advice in behalf of the institution. I also regret that I could not give the names of those whose suggestions have been adopted in the programme; the impossibility of rendering justice to all, has prevented my attempting this. Many of the suggestions have been offered by different persons, independently of each other; and, indeed, the general plan of the increase and diffusion of knowledge as adopted by the board, is such as would naturally arise in the mind of any person conversant with the history of physical science, and with the means usually employed for its extension and diffusion.

The introduction to the programme contains a series of propositions, suggested by a critical examination of the will of Smithson, to serve as a guide in judging of the fitness of any proposed plan for carrying out the design of the testator. The first section of the programme gives the details of the plan proposed for the increase and diffusion of knowledge by means of publication and original researches. The second section furnishes the details, so far as they can be made out at the present time, of the formation of a library, and a collection of objects of nature and art. These two plans combined, embrace the general propositions adopted by the Board of Regents at their last meeting, as the basis of future operations. It is intended in the proposed plan to harmonize the two modes of increasing

and diffusing knowledge, and to give to the institution the widest influence compatible with its limited income. That all the propositions will meet with general approval cannot be expected; and that this organization is the best that could be devised is neither asserted nor believed. To produce *a priori* a plan of organization which shall be found to succeed perfectly in practice, and require no amendment, would be difficult under the most favorable circumstances, and becomes almost impossible where conflicting opinions are to be harmonized, and the definite requirements of the act establishing the institution are to be observed. It is not intended that the details of the organization, as given in the programme, should be permanently adopted without careful trial; they are rather presented as suggestions to be adopted provisionally, and to be carried into operation gradually and cautiously, with such changes, from time to time, as experience may dictate.

PROGRAMME OF ORGANIZATION OF THE SMITHSONIAN INSTITUTION.

[Presented to the Board of Regents December 8, 1847.]

INTRODUCTION.

General considerations which should serve as a guide in adopting a plan of organization.

1. WILL OF SMITHSON. The property is bequeathed to the United States of America, "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."

2. The bequest is for the benefit of mankind. The government of the United States is merely a trustee to carry out the design of the testator.

3. The institution is not a national establishment, as is frequently supposed, but the establishment of an individual, and is to bear and perpetuate his name.

4. The objects of the institution are—1st, to increase, and 2d, to diffuse knowledge among men.

5. These two objects should not be confounded with one another. The first is to increase the existing stock of knowledge by the addition of new truths; and the second to disseminate knowledge, thus increased, among men.

6. The will makes no restriction in favor of any particular kind of knowledge; hence all branches are entitled to a share of attention.

7. Knowledge can be increased by different methods of facilitating and promoting the discovery of new truths, and can be most efficiently diffused among men by means of the press.

8. To effect the greatest amount of good, the organization should be such as to enable the institution to produce results in the way of increasing and diffusing knowledge, which cannot be produced by the existing institutions in our country.

9. The organization should also be such as can be adopted provisionally, can be easily reduced to practice, receive modifications, or be abandoned, in whole or in part, without a sacrifice of the funds.

10. In order to make up for the loss of time occasioned by the delay of eight years in establishing the institution, a considerable portion of the interest which has accrued should be added to the principal.

11. In proportion to the wide field of knowledge to be cultivated, the funds are small. Economy should therefore be consulted in the construction of the building; and not only should the first cost of the edifice be considered, but also the continual expense of keeping it in repair, and of the support of the establishment necessarily connected with it. There should also be but few individuals permanently supported by the institution.

12. The plan and dimensions of the building should be determined by the plan of the organization, and not the converse.

13. It should be recollected that mankind in general are to be benefited by the bequest, and that, therefore, all unnecessary expenditure on local objects would be a perversion of the trust.

14. Besides the foregoing considerations, deduced immediately from the will of Smithson, regard must be had to certain requirements of the act of Congress establishing the institution. These are a library, a museum, and a gallery of art, with a building on a liberal scale to contain them.

SECTION I.

Plan of organization of the institution, in accordance with the foregoing deductions from the will of Smithson.

TO INCREASE KNOWLEDGE. It is proposed—

1. To stimulate men of talent to make original researches, by offering suitable rewards for memoirs containing new truths; and,

2. To appropriate annually a portion of the income for particular researches, under the direction of suitable persons.

TO DIFFUSE KNOWLEDGE. It is proposed—

1. To publish a series of periodical reports on the progress of the different branches of knowledge; and,

2. To publish occasionally separate treatises on subjects of general interest.

DETAILS OF THE PLAN TO INCREASE KNOWLEDGE.

I. *By stimulating researches.*

1. Rewards, consisting of money, medals, &c., offered for original memoirs on all branches of knowledge.

2. The memoirs thus obtained to be published in a series of volumes, in a quarto form, and entitled "Smithsonian Contributions to Knowledge."

3. No memoir, on subjects of physical science, to be accepted for publication, which does not furnish a positive addition to human knowledge resting on original research; and all unverified speculations to be rejected.

4. Each memoir presented to the institution to be submitted for examination to a commission of persons of reputation for learning in the branch to which the memoir pertains, and to be accepted for publication only in case the report of this commission is favorable.

5. The commission to be chosen by the officers of the institution, and the name of the author, as far as practicable, concealed, unless a favorable decision be made.

6. The volumes of the memoirs to be exchanged for the Transactions of literary and scientific societies, and copies to be given to all the colleges and principal libraries in this country. One part of the remaining copies may be offered for sale; and the other carefully preserved, to form complete sets of the volumes, to supply the demand from new institutions.

7. An abstract, or popular account, of the contents of these memoirs to be given to the public through the annual report of the Regents to Congress.

II. *By appropriating a portion of the income, annually, to special objects of research, under the direction of suitable persons.*

1. The objects, and the amount appropriated, to be recommended by counsellors of the institution.

2. Appropriations in different years to different objects; so that in course of time, each branch of knowledge may receive a share.

3. The results obtained from these appropriations to be published, with the memoirs before mentioned, in the volumes of the Smithsonian Contributions to Knowledge.

4. Examples of objects for which appropriations may be made.

(1.) System of extended meteorological observations, for solving the problem of American storms.

(2.) Explorations in descriptive natural history, and geological, magnetical, and topographical surveys, to collect materials for the formation of a Physical Atlas of the United States.

(3.) Solution of experimental problems, such as a new determination of the weight of the earth, of the velocity of electricity, and of light; chemical

analyses of soils and plants; collection and publication of articles of science, accumulated in the offices of government.

(4.) Institution of statistical inquiries with reference to physical, moral, and political subjects.

(5.) Historical researches, and accurate surveys of places celebrated in American history.

(6.) Ethnological researches, particularly with reference to the different races of men in North America; also explorations and accurate surveys of the mounds and other remains of the ancient people of our country.

DETAILS OF THE PLAN FOR DIFFUSING KNOWLEDGE.

I. By the publication of a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional.

1. These reports will diffuse a kind of knowledge generally interesting, but which, at present, is inaccessible to the public. Some of the reports may be published annually, others at longer intervals, as the income of the institution, or the changes in the branches of knowledge, may indicate.

2. The reports are to be prepared by collaborators, eminent in the different branches of knowledge.

3. Each collaborator to be furnished with the journals and publications, domestic and foreign, necessary to the compilation of his report; to be paid a certain sum for his labors, and to be named on the title-page of the report.

4. The reports to be published in separate parts, so that persons interested in a particular branch can procure the parts relating to it, without purchasing the whole.

5. These reports may be presented to Congress, for partial distribution; the remaining copies to be given to literary and scientific institutions, and sold to individuals for a moderate price.

The following are some of the subjects which may be embraced in the reports.

I. PHYSICAL CLASS.

1. Physics, including astronomy, natural philosophy, chemistry, and meteorology.

2. Natural history, including botany, zoology, geology, &c.

3. Agriculture.

4. Application of science to arts.

II. MORAL AND POLITICAL CLASS.

5. Ethnology, including particular history, comparative philology, antiquities, &c.
6. Statistics and political economy.
7. Mental and moral philosophy.
8. A survey of the political events of the world ; penal reform, &c.

III. LITERATURE AND THE FINE ARTS.

9. Modern literature.
10. The fine arts, and their application to the useful arts.
11. Bibliography.
12. Obituary notices of distinguished individuals.

II. *By the publication of separate treatises on subjects of general interest.*

1. These treatises may occasionally consist of valuable memoirs, translated from foreign languages, or of articles prepared under the direction of the institution, or procured by offering premiums for the best exposition of a given subject.

2. The treatises should in all cases be submitted to a commission of competent judges previous to their publication.

3. As examples of these treatises, expositions may be obtained of the present state of the several branches of knowledge mentioned in the table of reports. Also of the following subjects, suggested by the Committee on Organization, viz: the statistics of labor, the productive arts of life, public instruction, &c.

SECTION II.

Plan of organization, in accordance with the terms of the resolutions of the Board of Regents, providing for the two modes of increasing and diffusing knowledge.

1. The act of Congress establishing the institution contemplated the formation of a library and a museum; and the Board of Regents, including these objects in the plan of organization, resolved to divide the income into two equal parts.

2. One part to be appropriated to increase and diffuse knowledge by means of publications and researches, agreeably to the scheme before given. The other part to be appropriated to the formation of a library and a collection of objects of nature and of art.

3. These two plans are not incompatible with one another.

4. To carry out the plan before described, a library will be required, consisting, 1st, of a complete collection of the transactions and proceedings of all the learned societies in the world; 2d, of the more important current periodical publications, and other works necessary in preparing the periodical reports.

5. The institution should make special collections, particularly of objects to verify its own publications.

6. Also a collection of instruments of research in all branches of experimental science.

7. With reference to the collection of books, other than those mentioned above, catalogues of all the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not to be found in the United States.

8. Also catalogues of memoirs, and of books in foreign libraries, and other materials, should be collected for rendering the institution a centre of bibliographical knowledge, whence the student may be directed to any work which he may require.

9. It is believed that the collections in natural history will increase by donation, as rapidly as the income of the institution can make provision for their reception, and therefore it will seldom be necessary to purchase any articles of this kind.

10. Attempts should be made to procure for the gallery of arts casts of the most celebrated articles of ancient and modern sculpture.

11. The arts may be encouraged by providing a room, free of expense, for the exhibition of the objects of the Art-Union and other similar societies.

12. A small appropriation should annually be made for models of antiquities, such as those of the remains of ancient temples, &c.

13. For the present, or until the building is fully completed, besides the Secretary, no permanent assistant will be required, except one, to act as librarian.

14. The duty of the Secretary will be the general superintendence, with the advice of the Chancellor and other members of the establishment, of the literary and scientific operations of the institution; to give to the Regents annually an account of all the transactions; of the memoirs which have been received for publication; of the researches which have been made; and to edit, with the assistance of the librarian, the publications of the institution.

15. The duty of the Assistant Secretary, acting as librarian, will be, for the present, to assist in taking charge of the collections, to select and purchase, under the direction of the Secretary and a committee of the board, books and catalogues, and to procure the information before mentioned; to

give information on plans of libraries, and to assist the Secretary in editing the publications of the institution and in the other duties of his office.

16. The Secretary and his assistants, during the session of Congress, will be required to illustrate new discoveries in science, and to exhibit new objects of art; also distinguished individuals should be invited to give lectures on subjects of general interest.

17. When the building is completed, and when, in accordance with the act of Congress, the charge of the National Museum is given to the Smithsonian Institution, other assistants will be required.

Explanations and illustrations of the programme.

Though the leading propositions of the programme have been fully discussed by the board, yet it will be important to offer some remarks in explanation and illustration of them in their present connexion.

That the institution is not a national establishment, in the sense in which institutions dependent on the government for support are so, must be evident when it is recollected that the money was not absolutely given to the United States, but intrusted to it for a special object, namely: the establishment of an institution for the benefit of men, to bear the name of the donor, and, consequently, to reflect upon his memory the honor of all the good which may be accomplished by means of the bequest. The operations of the Smithsonian Institution ought, therefore, to be mingled as little as possible with those of the government, and its funds should be applied exclusively and faithfully to the increase and diffusion of knowledge among men.

That the bequest is intended for the benefit of men in general, and that its influence ought not to be restricted to a single district, or even nation, may be inferred not only from the words of the will, but also from the character of Smithson himself; and I beg leave to quote, from a scrap of paper in his own hand, the following sentiment bearing on this point:—"The man of science has no country; the world is his country—all men, his countrymen." The origin of the funds, the bequest of a foreigner, should also preclude the adoption of a plan which does not, in the words of Mr. Adams, "spread the benefits to be derived from the institution not only over the whole surface of this Union, but throughout the civilized world." "Mr. Smithson's reason for fixing the seat of his institution at Washington obviously was, that *there* is the seat of government of the United States, and *there* the Congress by whose legislation, and the Ex-

entive through whose agency, the trust committed to the honor, intelligence, and good faith of the nation, is to be fulfilled." The centre of operations being permanently fixed at Washington, the character of this city for literature and science will be the more highly exalted in proportion as the influence of the institution is more widely diffused.

That the terms *increase* and *diffusion* of knowledge are logically distinct, and should be literally interpreted with reference to the will, must be evident when we reflect that they are used in a definite sense, and not as mere synonyms, by all who are engaged in the pursuits to which Smithson devoted his life. In England there are two classes of institutions, founded on the two ideas conveyed by these terms. The Royal Society, the Astronomical, the Geological, the Statistical, the Antiquarian Societies, all have for their object the increase of knowledge; while the London Institution, the Mechanics' Institution, the Surrey Institution, the Society for the Diffusion of Religious Knowledge, the Society for the Diffusion of Useful Knowledge, are all intended to diffuse or disseminate knowledge among men. In our own country, also, the same distinction is observed in the use of the terms by men of science. Our colleges, academies, and common schools, are recognised as institutions partially intended for the diffusion of knowledge, while the express object of some of our scientific societies is the promotion of the discovery of new truths.

The will makes no restriction in favor of any particular kind of knowledge; though propositions have been frequently made for devoting the funds exclusively to the promotion of certain branches of science having more immediate application to the practical arts of life, and the adoption of these propositions has been urged on the ground of the conformity of such objects to the pursuits of Smithson; but an examination of his writings will show that he excluded from his own studies no branch of general knowledge, and that he was fully impressed with the important philosophical fact, that all subjects of human thought relate to one great system of truth. To restrict, therefore, the operations of the institution to a single science or art, would do injustice to the character of the donor, as well as to the cause of general knowledge. If preference is to be given to any branches of research, it should be to the higher, and apparently more abstract; to the discovery of new principles, rather than of isolated facts. And this is true even in a practical point of view. Agriculture would have forever remained an empirical art, had it not been for the light shed upon it by the atomic theory of chemistry; and incomparably more is to be expected as to its future advancement from the perfection of the microscope, than from improvements in the ordinary instruments of husbandry.

The plan of increasing and diffusing knowledge, presented in the first section of the programme, will be found in strict accordance with the several propositions deduced from the will of Smithson, and given in the introduction. It embraces, as a leading feature, the design of interesting the greatest number of individuals in the operations of the institution, and of spreading its influence as widely as possible. It forms an active organization, exciting all to make original researches who are gifted with the necessary power, and diffusing a kind of knowledge, now only accessible to the few, among all those who are willing to receive it. In this country, though many excel in the application of science to the practical arts of life, few devote themselves to the continued labor and patient thought necessary to the discovery and development of new truths. The principal cause of this want of attention to original research, is the want, not of proper means, but of proper encouragement. The publication of original memoirs and periodical reports, as contemplated by the programme, will act as a powerful stimulus on the latent talent of our country, by placing in bold relief the real laborers in the field of original research, while it will afford the best materials for the use of those engaged in the diffusion of knowledge.

The advantages which will accrue from the plan of publishing the volumes of the Smithsonian Contributions to Knowledge, are various. In the first place, it will serve to render the name of the founder favorably known wherever literature and science are cultivated, and to keep it in continual remembrance with each succeeding volume, as long as knowledge is valued. A single new truth, first given to the world through these volumes, will forever stamp their character as a work of reference. The contributions will thus form the most befitting monument to perpetuate the name of one whose life was devoted to the increase of knowledge, and whose ruling passion, strong in death, prompted the noble bequest intended to facilitate the labors of others in the same pursuit.

Again, the publication of a series of volumes of original memoirs will afford to the institution the most ready means of entering into friendly relations and correspondence with all the learned societies in the world, and of enriching its library with their current transactions and proceedings. But perhaps the most important effect of the plan will be that of giving to the world many valuable memoirs, which, on account of the expense of the illustrations, could not be otherwise published. Every one who adds new and important truths to the existing stock of knowledge, must be of necessity, to a certain degree, in advance of his age. Hence the number of readers and purchasers of a work is generally in the inverse

ratio of its intrinsic value; and consequently, authors of the highest rank of merit are frequently deterred from giving their productions to the world on account of the pecuniary loss to which the publication would subject them. When our lamented countryman, Bowditch, contemplated publishing his commentary on La Place, he assembled his family and informed them that the execution of this design would sacrifice one-third of his fortune, and that it was proper his heirs should be consulted on a subject which so nearly concerned them. The answer was worthy of the children of such a father: "We value," said they, "your reputation more than your money." Fortunately, in this instance, the means of making such a sacrifice existed; otherwise one of the proudest monuments of American science could not have been given to the world. In the majority of cases, however, those who are most capable of extending human knowledge are least able to incur the expense of the publication. Wilson, the American Ornithologist, states, in a letter to Michaux, that he has sacrificed everything to publish his work: "I have issued," he says, "six volumes, and am engaged on the seventh, but as yet I have not received a single cent of the proceeds." In an address on the subject of natural history, by one of our most active cultivators of this branch of knowledge, we find the following remarks, which are directly in point: "Few are acquainted with the fact that from the small number of scientific works sold, and the great expense of plates, our naturalists not only are not paid for their labors, but suffer pecuniary loss from their publications. Several works on different branches of zoology, now in the course of publication, will leave their authors losers by an aggregate of \$15,000. I do not include in this estimate works already finished—one, for instance, the best contribution to the natural history of man extant, the publication of which will occasion its accomplished author a loss of several thousand dollars. A naturalist is extremely fortunate if he can dispose of 200 copies of an illustrated work, and the number of copies printed rarely exceeds 250." It may be said that these authors have their reward in the reputation which they thus purchase; but reputation should be the result of the talents and labor expended in the production of a work, and should not in the least depend upon the fact that the author is able to make a pecuniary sacrifice in giving the account of his discoveries to the public.

Besides the advantage to the author of having his memoir published in the Smithsonian Contributions free of expense, his labors will be given to the world with the stamp of approval of a commission of learned men; and his merits will be generally made known through the reports of the institution. Though the premiums offered may be small, yet they will have considerable effect in producing original articles. Fifty or a hundred dollars

awarded to the author of an original paper, will, in many instances, suffice to supply the books, or to pay for the materials, or the manual labor required, in prosecuting the research.

There is one proposition of the programme which has given rise to much discussion, and which, therefore, requires particular explanation; I allude to that which excludes from the contributions all papers consisting merely of unverified speculations on subjects of physical science. The object of this proposition is to obviate the endless difficulties which would occur in rejecting papers of an unphilosophical character; and though it may in some cases exclude an interesting communication, yet the strict observance of it will be found of so much practical importance that it cannot be dispensed with. It has been supposed, from the adoption of this proposition, that we are disposed to undervalue abstract speculations: on the contrary, we know that all the advances in true science—namely, a knowledge of the laws of phenomena—are made by provisionally adopting well-conditioned hypotheses, the product of the imagination, and subsequently verifying them by an appeal to experiment and observation. Every new hypothesis of scientific value must not only furnish an exact explanation of known facts, but must also enable us to predict, in kind and quantity, the phenomena which will be exhibited under any given combination of circumstances. Thus, in the case of the undulatory hypothesis of light, it was inferred, as a logical consequence, that if the supposition were true that light consisted of waves of an ethereal medium, then two rays of light, like two waves of water under certain conditions, should annihilate each other, and darkness be produced. The experiment was tried, and the anticipated result was obtained. It is this exact agreement of the deduction with the actual result of experience that constitutes the verification of an hypothesis, and which alone entitles it to the name of a theory, and to a place in the Transactions of a scientific institution. It must be recollected that it is much easier to speculate than to investigate, and that very few of all the hypotheses imagined are capable of standing the test of scientific verification.

For the practical working of the plan for obtaining the character of a memoir, and the precaution taken before it is accepted for publication, I would refer to the correspondence, given in a subsequent part of this report, relative to the memoir now in process of publication by the institution. As it is not our intention to interfere with the proceedings of other institutions, but to co-operate with them, so far as our respective operations are compatible, communications may be referred to learned societies for inspection, as in the case of the above mentioned memoir, and abstracts of them given to the world through the bulletins of these societies, while the details

of the memoirs and their expensive illustrations are published in the volumes of the Smithsonian Contributions. The officers of several learned societies in this country have expressed a willingness to co-operate in this way.

Since original research is the most direct way of increasing knowledge, it can scarcely be doubted that a part of the income of the bequest should be appropriated to this purpose, provided suitable persons can be found, and their labors be directed to proper objects. The number, however, of those who are capable of discovering scientific principles is comparatively small; like the poet, they are "born, not made," and, like him, must be left to choose their own subject, and wait the fitting time of inspiration. In case a person of this class has fallen on a vein of discovery, and is pursuing it with success, the better plan will be to grant him a small sum of money to carry on his investigations, provided they are considered worthy of assistance by competent judges. This will have the double effect of encouraging him in the pursuit, and of facilitating his progress. The institution, however, need not depend upon cases of this kind, even if they were more numerous than they are, for the application of its funds in the line of original research. There are large fields of observation and experiment, the cultivation of which, though it may afford no prospect of the discovery of a principle, can hardly fail to produce results of importance both in a practical and a theoretic point of view. As an illustration of this remark, I may mention the case of the investigations made a few years ago by committees of the Franklin Institute, of Philadelphia. The Secretary of the Treasury of the United States placed at the disposal of this society a sum of money, for the purpose of making experiments with reference to the cause of the explosion of steam-boilers. A committee of the society was chosen for this purpose, which adopted the ingenious plan of writing to all persons in the United States engaged in the application of steam, and particularly to those who had observed the explosion of a steam-boiler. In this way opinions and suggestions in great variety, as to the cause of explosions, were obtained. The most plausible of these were submitted to the test of experiment: the results obtained were highly important, and are to be found favorably mentioned in every systematic work on the subject of steam which has appeared, in any language, within the last few years. New and important facts were established; and, what was almost of as much consequence, errors which had usurped the place of truth were dethroned.

In the programme, examples are given of a few subjects of original research to which the attention of the institution may be turned. I will

mention one in this place, which, in connexion with the contents of our first memoir, may deserve immediate attention. I allude to a small appropriation made annually for researches with reference to the remains of the ancient inhabitants of our country. This is a highly interesting field, and what is done in regard to it should be done quickly. Every year the progress of civilization is obliterating the ancient mounds, cities and villages are rising on the spots they have so long occupied undisturbed, and the distinctive marks of these remains are every year becoming less and less legible.

In carrying out the spirit of the plan adopted, namely, that of affecting men in general by the operations of the institution, it is evident that the principal means of diffusing knowledge must be the *press*. Though lectures should be given in the city in which Smithson has seen fit to direct the establishment of his institution, yet, as a plan of general diffusion of knowledge, the system of lectures would be entirely inadequate; every village in our extended country would have a right to demand a share of the benefit, and the income of the institution would be insufficient to supply a thousandth part of the demand. It is also evident that the knowledge diffused should, if possible, not only embrace all branches of general interest, so that each reader might find a subject suited to his taste, but also that it should differ in kind and quality from that which can be readily obtained through the cheap publications of the day. These requisites will be fully complied with in the publications of the series of reports proposed in the programme. A series of periodicals of this kind, posting up all the discoveries in science from time to time, and giving a well digested account of all the important changes in the different branches of knowledge, is a desideratum in the English language. The idea is borrowed from a partial plan of this kind in operation in Sweden and Germany; and for an example of what the work should be, I would refer to the annual report to the Swedish Academy of its perpetual Secretary, Berzelius, on physical science. The reports can be so prepared as to be highly interesting to the general reader, and at the same time of great importance to the exclusive cultivator of a particular branch of knowledge. Full references should be given, in foot-notes, to the page, number, or volume of the work from which the information was obtained, and where a more detailed account can be found. It is scarcely necessary to remark, that the preparation of these reports should be intrusted only to persons profoundly acquainted with the subjects to which they relate—namely, to those who are devoted to particular branches, while they possess a knowledge of general principles. Sufficient explanations should be introduced to render the report in-

intelligible to the general reader, without destroying its scientific character. Occasionally reports may be obtained from abroad—as, for example, accounts of the progress of certain branches of knowledge in foreign countries—and these may be translated, if necessary, and incorporated into other reports, by some competent person in this country.

Besides the reports on the progress of knowledge, the programme proposes to publish occasionally brief treatises on particular subjects. There are always subjects of general interest, of which brief expositions would be of much value. The preparation of these, however, should be intrusted to none but persons of character and reputation, and should be subjected to a revision by competent and responsible judges before they are given to the public. They may be presented in the form of reports on the existing state of knowledge relative to a given subject, and may sometimes consist of memoirs and expositions of particular branches of literature and science, translated from foreign languages. The reports and treatises of the institution, sold at a price barely sufficient to pay the expense of printing, will find their way into every school in our country, and will be used not as first lessons for the pupil, but as sources of reliable information for the teacher.

The second section of the programme gives, so far as they have been made out, the details of the part of the plan of organization directed by the act of Congress establishing the institution. The two plans, namely, that of publication and original research, and that of collections of objects of nature and art, are not incompatible, and may be carried on harmoniously with each other. The only effect which they will have on one another is that of limiting the operation of each, on account of the funds given to the other. Still, with a judicious application, and an economical expenditure of the income, and particularly by rigidly observing the plan of finance, suggested by Dr. Bache, in the construction of the building, much good may be effected in each of the two branches of the institution. To carry on the operations of the first, a working library will be required, consisting of the past volumes of the transactions and proceedings of all the learned societies in every language. These are the original sources from which the most important principles of the positive knowledge of our day have been drawn. We shall also require a collection of the most important current literature and science for the use of the collaborators of the reports; most of these, however, will be procured in exchange for the publications of the institution, and therefore will draw but little from the library fund. For other suggestions relative to the details of the library, I

would refer you to the annexed communication from Professor Jewett, Assistant Secretary, acting as librarian. (See appendix No. 1.)

The collections of the institution, as far as possible, should consist of such articles as are not elsewhere to be found in this country, so that the visitors at Washington may see new objects, and the spirit of the plan be kept up, of interesting the greatest possible number of individuals. A perfect collection of all objects of nature and of art, if such could be obtained and deposited in one place, would form a museum of the highest interest; but the portion of the income of the bequest which can be devoted to the increase and maintenance of the museum, will be too small to warrant any attempt towards an indiscriminate collection. It is hoped that in due time other means may be found of establishing and supporting a general collection of objects of nature and art at the seat of the general government, with funds not derived from the Smithsonian bequest. For the present, it should be the object of the institution to confine the application of the funds, first, to such collections as will tend to facilitate the study of the memoirs which may be published in the Contributions, and to establish their correctness; secondly, to the purchase of such objects as are not generally known in this country, in the way of art, and the illustration of antiquities, such as models of buildings, &c.; and, thirdly, to the formation of a collection of instruments of physical research, which will be required both in the illustration of new physical truths, and in the scientific investigations undertaken by the institution.

Much popular interest may be awakened in favor of the institution at Washington, by throwing the rooms of the building open, on stated evenings during the session of Congress, for literary and scientific assemblies, after the manner of the weekly meetings of the Royal Institution in London. At these meetings, without the formality of a regular lecture, new truths in science may be illustrated, and new objects of art exhibited. Besides these, courses of lectures may be given on particular subjects by the officers of the institution, or by distinguished individuals invited for the purpose.

Commencement of the operations of the institution.

I was authorized, in connexion with the Committee on Organization, to commence the publication of the Smithsonian Contributions to Knowledge, and to receive any memoir which might be presented on any subject, provided it was found, on examination, to furnish an interesting addition to the sum of human knowledge, resting on original research. The first memoir presented, and found to be of the character prescribed by

the resolution of the board, was one on the remains of the ancient inhabitants of the North American continent. It contains the result of several years' labor in the survey and exploration of the mounds and earth-works of the Mississippi valley, and will furnish a highly interesting addition to the antiquities of our country, which could not have been given to the world, but for the timely aid extended to it by this institution. The memoir was referred to the American Ethnological Society, with a request that a committee of its members might be appointed to examine and report on its character, as to fitness for publication in the *Smithsonian Contributions to Knowledge*. On the favorable report of this committee, and on the responsibility of the society, the memoir has been accepted for publication. The following correspondence will serve to give an account of the work, and to illustrate the manner in which it is proposed to submit the papers which may be presented for publication to a commission of competent judges.

CORRESPONDENCE RELATIVE TO THE ACCEPTANCE FOR PUBLICATION OF THE
ETHNOLOGICAL MEMOIR OF MESSRS. SQUIER AND DAVIS.

From Messrs. Squier and Davis to the Secretary of the Smithsonian Institution.

CHILlicothe, O., May 15, 1847.

DEAR SIR: It is proposed in the recognised plan of organization of the Smithsonian Institution, of which you are the executive officer, to publish, under the title of "*Smithsonian Contributions to Knowledge*," such original papers and memoirs "as shall constitute valuable additions to the sum of human knowledge." Under the belief that it falls legitimately within the scope of the above plan, the undersigned herewith submit for acceptance and publication, subject to the prescribed rules of the institution, a MS. memoir, entitled "ANCIENT MONUMENTS OF THE MISSISSIPPI VALLEY, *comprising the results of Extensive Original Surveys and Explorations*:" by E. G. SQUIER and E. H. DAVIS." The extent of these investigations, and their general character, are sufficiently indicated in the prefatory remarks to the volume.

With high consideration, we are truly yours,

E. GEO. SQUIER.
E. H. DAVIS.

JOSEPH HENRY, Esq.,
Secretary Smithsonian Institution.

From the Secretary of the Smithsonian Institution to the President of the American Ethnological Society.

WASHINGTON, June 2, 1847.

DEAR SIR: I am authorized by the Regents of the Smithsonian Institution to publish, in the numbers of the "*Smithsonian Contributions to Knowledge*," any memoir which may be presented for this purpose, provided that, on careful

examination by a commission of competent judges, the memoir shall be found to furnish a new and interesting addition to knowledge, resting on original research. The accompanying memoir, entitled "*Ancient Monuments of the Mississippi Valley*," &c., having been presented for publication, I beg leave to refer the same, through you, to the American Ethnological Society, with the request that a committee of the members may be appointed to examine and report on its character, in reference to the particulars above mentioned. If the report of the committee be favorable, the memoir will be accepted for publication; full confidence being placed in the ability of the committee to judge of the character of the article, and in their caution in making up their opinion.

I have the honor to be, very respectfully, your obedient servant,

JOSEPH HENRY,
Secretary Smithsonian Institution.

HON. ALBERT GALLATIN,
President American Ethnological Society.

Extract of a letter from the President of the American Ethnological Society to the Secretary of the Smithsonian Institution.

"NEW YORK, June 12, 1847.

"DEAR SIR: I have the honor to enclose a copy of the proceedings and resolutions of the New York Ethnological Society upon the MS. work on American Antiquities, by Messrs. E. G. Squier and E. H. Davis, submitted with your letter of the 2d inst.

"I approve entirely of the resolutions and recommendations of the society.

"Whatever may be the intrinsic value of the remains of former times which are found in the United States, it is necessary that they should at least be correctly described, and that existing gross errors should be corrected; and I repeat my conviction that, though ardent, Messrs. Squier and Davis are animated by that thorough love of truth which renders their researches worthy of entire confidence.

"I have the honor to be, &c.,

"ALBERT GALLATIN.

"Prof. J. HENRY,

"*Secretary of Smithsonian Institution.*"

At a regular meeting of the American Ethnological Society, held at the house of the Hon. ALBERT GALLATIN, on the evening of the 4th of June, the president laid before the members a communication from Professor J. HENRY, Secretary of the Smithsonian Institution, transmitting, for the examination and opinion of the society, a MS. work on the Ancient Aboriginal Monuments of the United States. On motion, the letter and accompanying MS. were referred to a committee consisting of EDWARD ROBINSON, D. D., JOHN R. BARTLETT, Professor W. W. TURNER, SAMUEL G. MORTON, M. D., and Hon. GEORGE P. MARSH, to report upon the same. At a subsequent meeting of the society, this committee submitted the following report and resolutions, which were unanimously accepted and adopted:

REPORT.

The committee of the American Ethnological Society, to which was referred the communication of the Secretary of the Smithsonian Institution, transmitting a manuscript work, entitled "*ANCIENT MONUMENTS OF THE MISSISSIPPI VALLEY, comprising the results of Extensive Original Surveys and Explorations,*" by E. G. SQUIER and E. H. DAVIS, beg leave to report, that

They have examined the work in question, and regard it not only as a new and interesting, but as an eminently valuable addition to our stock of knowledge on a subject little understood, but in which is felt a deep and constantly increasing interest, both in our country and abroad. In their judgment, the work is worthy of the subject, and highly creditable to the authors. Its chief features are, a scientific arrangement, simplicity, and directness of statement, and legitimate deduction from facts, while there is no attempt at mere speculation or theory. If published, it will be an enduring monument to connect the names of the investigators in honorable and lasting remembrance with the great subject of American Archæology.

The existence and progress of these investigations were made known to the society by correspondence early in the year 1846; and in June of that year specimens of the relics recovered, accompanied by numerous maps and plans of ancient earthworks and sectional views of the mounds from which the remains were taken, were laid before the society by Mr. Squier in person. These excited deep interest and surprise in all who saw them; and the society immediately took measures to encourage further investigation, and secure the publication, under its own auspices, of the important results already obtained. A few months later, the chairman of the present committee, being in Ohio, was enabled, through the kindness of Messrs. Squier and Davis, to visit several of the more important monuments in the immediate vicinity of Chillicothe, and, among these, "Mound City," so called, from which very many of the minor relics and specimens were procured. He was struck with the accuracy of the plans and drawings, as well as of the accounts which had been laid before the society, and bears full testimony to the fidelity and integrity with which the process of investigation and delineation has been conducted.

During the last and present season the researches of these gentlemen have been actively prosecuted and widely extended, and the above work, largely illustrated, comprising the results, has been prepared. These results are so numerous and important, and consequently such is the extent and magnitude of the work itself, as to put its publication beyond any means which the society can command. Under these circumstances, your committee learn with pleasure that preliminary arrangements have been made for its publication by the Smithsonian Institution, among its "*Contributions to Knowledge.*" It can only be a matter of sincere gratification to this society to see that which it cannot itself accomplish for the history and antiquities of our country, taken up and carried out under such favorable auspices; and they cannot but rejoice that an opportunity is thus afforded to that noble institution of opening its high career by fostering scientific researches into the interesting problems connected with the Ante-Columbian history and Aboriginal monuments of our own country.

In view of these facts, your committee would recommend the adoption of the following resolutions by the society:

Resolved, That this society regard the researches of Messrs. Squier and Davis as of very great importance in American Archæology, and as casting much light upon our aboriginal antiquities, especially upon the character and habits of the earliest races which had their seat in the Mississippi valley.

Resolved, That we regard the work prepared upon this subject as one of great general interest, and as worthy to be adopted for publication by the Smithsonian Institution, both as resting on original researches, and as affording remarkable illustrations of the history of the American continent.

Your committee would also append to this report the accompanying letters from Samuel G. Morton, M. D., of Philadelphia, and Hon. George P. Marsh, of Vermont, both members of this society, and joint members of this committee.

All of which is respectfully submitted.

EDWARD ROBINSON, }
JOHN R. BARTLETT, } *Committee.*
W. W. TURNER, }

NEW YORK, *June*, 1847.

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NEW YORK, *June* 9, 1847.

I have examined with much interest and attention the manuscripts, drawings, and ancient relics in the possession of Mr. E. G. Squier, and am happy to say that my previous impressions concerning the value of the researches of that gentleman and his associate are fully confirmed. It is fortunate for the cause of American Archaeology that the first systematic attempt at its elucidation should have been conceived and executed in so truly philosophical a spirit: and rich as this age already is in antiquarian lore, it has, I think, received few more important contributions than that which the enlightened and generous zeal of these two private gentlemen is about to confer upon it. The Smithsonian collections could not begin with a more appropriate or creditable essay: and I hope that every facility may be afforded to the authors in bringing before the public the results of their honorable labors in as suitable a form and with as little delay as possible.

GEO. P. MARSH.

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PHILADELPHIA, *June* 8, 1847.

As a member of the committee of the American Ethnological Society, appointed to report on the memoir on American Archaeology, by Messrs. E. G. SQUIER and E. H. DAVIS, I have great pleasure in saying that after a careful and repeated inspection of the materials in the hands of those gentlemen, I am convinced they constitute by far the most important contribution to the Archaeology of the United States that has ever been offered to the public. The number and accuracy of their plans, sketches, &c., have both interested and surprised me, and it is gratifying to learn that the preliminary arrangements have been made for their publication under the honorable auspices of the Smithsonian Institution.

SAML. GEORGE MORTON.

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The memoirs of Messrs. Squier and Davis will occupy the greater portion, if not the whole, of the first volume of the Contributions. The illustrations will consist of fifty-five quarto plates of the mounds, earthworks, and maps of the adjacent country; also, of about two hundred wood-cuts, principally delineations of the various articles found in the mounds. Those who consider no branch of knowledge of any value but such as

relates to the immediate gratification of our physical wants, have objected to the acceptance of this memoir as one of the first publications of the institution; but it must be recollected that the will of' Smithson makes no restriction in favor of any particular kind of knowledge, and that each branch is, therefore, entitled to a share of his bequest. The Ethnological memoir of Messrs. Squier and Davis was the first, of the proper character, presented for publication, and hence it was entitled to the first place in the series of Smithsonian Contributions. Besides this, it furnishes an addition to a branch of knowledge which is at this time occupying the attention of a large class of minds, and which cannot fail to be interesting to every intelligent person who would learn something of the changes to which man has been subjected.

One of the volumes of the Contributions will contain a sketch of the life of Smithson, by the Chancellor. The materials for this have been collected from the several volumes of the Transactions of the Royal Society, and the scientific journals of the beginning of the present, and the latter part of the last century. The first volume will be published as soon as the wood-cuts and plates, now in the course of preparation, are finished.

Besides the memoirs before mentioned, a number of others have been presented, some of which, though apparently of interest, and the product of thought and labor, were not of the character required by the resolution of the board, and these have either been returned to the authors, or are in the possession of the Secretary. A number of others have also been provisionally adopted, or are in the course of preparation. Some of these are on the most abstruse parts of physical science, and all will do honor to the intellectual character of our country. Though the number of original memoirs which will be found worthy of a place in the Contributions will probably not be large, yet it will, perhaps, be best to set apart a definite portion of the income of the bequest—as, for example, at present three or four thousand dollars annually—to defray the expense of this part of the plan of increasing knowledge. A considerable portion, however, of the sum thus expended will be returned to the institution in the form of additions to its library. I may also suggest, in this place, the propriety of the adoption, by the board, of a resolution inviting all engaged in original research to send the results of their labors for publication in the Smithsonian Contributions.

The board also directed me to commence the collection of apparatus, and I accordingly sent orders to Europe, to the amount of twelve hundred dollars, for the purchase of such articles as could not be procured in the United States. Most of the instruments have been received, and will

be found of importance, not only in the way of original research, but also in illustrating some of the most interesting and recent phenomena of physical science, as well as serving as samples for imitation to the artists of this country. It was thought that these articles would be admitted free of duty, and a petition to this effect was presented to the Secretary of the Treasury; but, though this officer is well known to be much interested in the prosperity of the institution, such is the nature of the law that the duty could not be remitted.

There is an article of apparatus which, within a few years past, has opened almost a new world of research in the phenomena of life and organization, the use of which is now indispensable in advancing our knowledge of physiology and its kindred branches of science. I allude to the achromatic microscope, to increase the power of which, the artists of Germany, France, and England have vied with each other. On account of the small number of persons who are capable of constructing the proper lenses, the best specimens of this instrument are very scarce in this country, and can be procured only at a great expense. Under these circumstances, it was a matter of much interest to learn, from a source which could be relied upon, that an individual in the interior of the State of New York had successfully devoted himself to the study of the microscope, and that he was able to produce instruments of this kind which would compete with the best of those constructed in Europe. In order to do justice to the talents and labors of this person, as well as to furnish the institution with a valuable instrument of research, I requested him to construct a microscope, to be paid for out of the funds for the purchase of apparatus, provided that a commission, appointed by myself, should find it capable of producing certain effects. This proposition was accepted, and the result will probably be given to the board at the next meeting.

Preparations have also been made for instituting various lines of physical research. Among the subjects mentioned in the programme as an example for the application of the funds of the institution, is terrestrial magnetism. I need scarcely say that this is a subject not only of high interest in a theoretical point of view, but also in its direct reference to navigation and the various geodetical operations of civil and military life. A resolution of Congress, authorizing the exploration of the mineral lands adjacent to the great lakes, has given to us the means of advancing this branch of knowledge with but little expenditure of the funds of the institution. The Secretary of the Treasury readily agreed to the proposition that there should be added to the mineralogical and geological surveys of these regions, determinations of the dip, the variation, and the intensity of the

magnetic forces, provided that the Smithsonian Institution would furnish one set of the instruments, and take charge of the direction of the observations, and of reducing and publishing them. In the survey of the mineral lands in the vicinity of lake Michigan under Dr. Jackson, Dr. Locke, of Cincinnati, has been employed with his own apparatus; and to supply the necessary instruments for the survey in Wisconsin, preliminary steps have been taken to procure other instruments from London.

Another subject of research mentioned in the programme, and which has been urged upon the immediate attention of the institution, is that of an extensive system of meteorological observations, particularly with reference to the phenomena of American storms. Of late years, in our country, more additions have been made to meteorology than to any other branch of physical science. Several important generalizations have been arrived at, and definite theories proposed, which now enable us to direct our attention, with scientific precision, to such points of observation as cannot fail to reward us with new and interesting results. It is proposed to organize a system of observations which shall extend as far as possible over the North American continent; and in order to this, it will be necessary to engage the co-operation of the British government. I have accordingly addressed a letter on this subject to Lieutenant Colonel Sabine, corresponding secretary of the Royal Society, who assures me that, as soon as the plan is fully matured for this country, there will be no difficulty in establishing a system of corresponding observations in the British provinces. I have also addressed letters to several gentlemen distinguished for their attainments in meteorology, asking for suggestions as to the plan of observation; and I beg leave to refer the board to the accompanying report of Prof. Loomis, of New York University, and also to the communication of Prof. Espy, received in answer. (Appendix Nos. 2 and 3.) The former contains an exposition of the advantages which may be derived from the study of meteorology, and what has been done in this branch of science in this country, and what encouragement there is for the further prosecution of the same subject, together with a general plan of operations. The present time appears to be peculiarly auspicious for commencing an enterprise of the proposed kind. The citizens of the United States are now scattered over every part of the southern and western portion of North America, and the extended lines of telegraph will furnish a ready means of warning the more northern and eastern observers to be on the watch for the first appearance of an advancing storm.

All which is respectfully submitted.

JOSEPH HENRY,
Secretary.

To the REGENTS of the *Smithsonian Institution.*

APPENDIX No. 1.

Extract from a communication of Professor Jewett, Assistant Secretary of the institution, acting as librarian.

MY DEAR SIR: AS I do not expect to have the pleasure of seeing you again before the meeting of the Regents, I will, with your indulgence, refer to some of the principal matters which will require attention in commencing the library. They would no doubt all occur to you in their order, but I have thought you might find it convenient to have this part of the business in some degree prepared to your hands. A great deal of preparatory work is to be gone through with, before any books can be placed on the shelves.

1. On the plan proposed for the library, it seems to me that the first thing to be done is to make arrangements for obtaining catalogues, printed or in manuscript, of the principal libraries of the United States; to examine these libraries, as far as can be done personally, in order to know their general character, the statistics of their increase, &c.; and to form such alliances with the librarians as will be indispensable in making the library of the institution, in conformity with the suggestion of Dr. Bache, a supplemental one, and a centre of bibliographical reference. Some libraries possess printed catalogues complete nearly down to the present time; others are several years behindhand. It will be necessary to procure manuscript catalogues in continuation of those which have been printed, and to make arrangements for receiving, from month to month, or from year to year, lists of all future accessions. These supplementary catalogues should all be prepared on a uniform plan. The titles should be written on cards of the same size, so that they may be placed together in one alphabetical arrangement, in order to facilitate research. A mark placed on the back of each card will designate the library from which it came. Now, in every library with which we are in correspondence some one must be employed to do this. It would be merely clerk's labor, where the catalogues are properly kept, and no doubt the librarian or assistant might in every case be induced to undertake it for a small compensation.

2. The next thing to be done will be to make arrangements for procuring the books to which we are entitled by the 10th section of the charter of the institution. Unless something be done, this provision, in course of time, will bring in comparatively few books in a year. I have no doubt that publishers generally would readily send their books, if the subject were properly presented to them, and arrangements made by which they could transmit them to Washington without subjecting the institution or themselves to expenses altogether disproportioned to the value of the books.

It has occurred to me that perhaps the several district clerks might be induced to attend to the business: it is perhaps legally their duty to do so, but I suppose it would be unsafe to rely upon their performing faithfully such an unexpected duty, unless they received for it some additional compensation. Besides this, a circular might be printed and sent to publishers, setting forth the advantages which would result directly to the cause of letters, and indirectly to themselves, from compliance with this requirement. By these means I think we should obtain nearly all the publications of importance issued from the American press.

3. The selection of books for the first purchase must be made. This will, I suppose, comprise three classes of works: 1. Those which may be immediately needed in the scientific department; 2. Bibliographical works and descriptions, histories and catalogues of similar institutions; and, 3. The general collection, consisting of the memoirs, transactions, and journals of the learned societies of Europe and America. These three classes of books will form a library quite unique, and one of great utility. The catalogue, if it be made with fulness and accuracy, will be a valuable publication. I think, further, that a somewhat extended list of books should be made out for future purchases. These lists should be intrusted to honest and faithful men in some of the principal book marts in Europe, with orders to buy the books whenever they can find them—at say one-half *the ordinary prices*. In this way we should obtain at very low prices great numbers of the books which we shall want. Of course, the same list should not be left with different men. The work should be done with care, and by consultation with the best scholars in the country. It will be difficult to find the necessary bibliographical *helps*. The best collection of them in the country is in the library of the Brown University, but this is very imperfect.

4. The first *purchases* are to be made, and the arrangements for future purchases. These, of course, should not be commenced until the lists are as far completed as they can judiciously be in this country.

5. Another subject contemplated in the programme of organization, and which should receive immediate attention, is the procuring of copies of some of the most celebrated *works of art*. It will probably be best to confine the purchases at first principally to plaster casts of some of the finest specimens of ancient and modern statuary. These can be procured very cheap, and convey, of course, a perfect representation of the original. I have no doubt that for a public institution, and one under national auspices, we could, whenever we desire it, obtain permission to take casts directly from the statues.

The expense of doing so would of course be somewhat greater than that of purchasing such copies as might be found in the market, but a

small difference in expense is not to be thought of in such a case. It would further be desirable to commence the purchase of the models of antiquities, such as models in cork of some of the houses, temples, theatres, baths, &c., &c., in Pompeii and Herculaneum. These can be procured at comparatively small prices. Models of every interesting part of Pompeii which has been excavated, presenting in miniature a perfect view of nearly the whole on the scale of 1 foot to 150, might be procured for about \$2,000. It might also be well to procure a few Etruscan vases; also a few antique coins and medals, sufficient to convey some illustration of numismatics, as a subsidiary branch of history. The Regents should of course decide what proportion of the appropriation for collections should each year be expended for these purposes. I will merely remark that \$1,000, or even \$500 at the outset, prudently expended, would procure a very interesting collection.

I have thus stated quite in detail the work which must be done before the library can be ready for use, or rather before any part of it can be placed upon the shelves. Before it can be ready for use, much more is to be done in arranging and cataloguing. To lay properly the foundation of a large library is a slow work, and much time must necessarily be consumed in producing but small visible results.

I am, my dear sir, very truly, your friend and servant,

C. C. JEWETT.

PROFESSOR HENRY, LL. D.,

Secretary Smithsonian Institution.

APPENDIX No. 2.

*Report on the Meteorology of the United States: By Professor LOOMIS
Submitted to the Secretary of the Smithsonian Institution.*

MY DEAR SIR: Believing that the science of meteorology has now arrived at that stage of advancement in which a more powerful combination of observers is needed to secure any rapid progress, I fully concur in the importance of establishing an extended system of observations under the direction of the Smithsonian Institution, and propose in this report briefly to inquire,

I. What advantages society may expect to derive from the study of meteorology, particularly that branch of it which relates to the phenomena of storms.

II. What has already been done in this country, 1st, towards making the necessary observations; and, 2d, towards deducing from the observations general laws.

III. What encouragement there is to a further prosecution of the same researches; and,

IV. I shall offer a plan for securing these advantages in their fullest extent.

I. Of what importance to society is the study of meteorology?

Very little argument is needed to prove that our comfort and convenience, and not unfrequently our lives and property, are dependent upon meteorological phenomena. This is proverbially true of the mariner. The moment he embarks upon the treacherous sea, he finds himself at the mercy of the winds. His life often depends upon the fidelity with which he watches every change in the aspect of the sky. In a single hour he may exchange the deceptive calm for the fatal tornado. The number of disasters upon the sea is frightful, and is far greater than is generally known. In the gale of December 15, 1839, 89 vessels were wrecked on the Massachusetts coast; and of these, 61 on a single cape. In the great hurricane of 1780, 13 battle-ships were lost, and 16 more dismasted. England and America alone suffer an annual loss from wrecks of more than 1,000 vessels, and nearly one-half of this is on the American coast.

But how can the study of meteorology benefit the sailor? Will it enable him to calm the tempest—to subdue the raging of the sea? This we do not expect; yet, if he can anticipate the approach of a storm even by a few hours, he may generally place himself beyond the reach of its fury. Is it in the power of science to enable the navigator to anticipate the coming tempest? If so, then it would be difficult to name a subject of more vital importance to our commerce. How far this object has been already attained, and what encouragement there is to expect further discoveries, I shall consider hereafter.

The sailor is not the only person who has an interest in the study of meteorology. Although but a small part of the population of the United States are directly engaged in foreign commerce, yet so important has this department of industry become, and so interwoven with all the business of the country, that there is not a trade or profession which does not feel the shock of any great disaster at sea. Aside from this indirect interest, the farmer is directly dependent upon the weather for the consummation of his plans, almost equally with the sailor. Severe drought or excessive rains, untimely frost or a scorching sun, may blast all the hopes of the husbandman. Here it may be asked, do you expect to produce rain or sunshine at pleasure? Probably not. But if we can anticipate the general character of a season, the farmer may regulate his time of planting or the nature of his crops, so as to be least injuriously affected by unpropitious weather; so that, if we cannot strip the lightning of its power, we may at least direct it harmlessly to the earth.

Again, an extensive series of meteorological observations may prove of immense importance to the scientific physician. It cannot be doubted that the salubrity of a climate is to a great extent dependent upon its meteorology—on its mean temperature, the range of the thermometer, the suddenness of its changes, the moisture of the air, excessive rains or unusual droughts, &c. To trace the connexion between these causes and prevalent diseases, requires an accumulation of precise meteorological observations made in every variety of exposure, and continued for a long period of time. That it is possible to discover such a connexion, if it really exist, cannot admit of a reasonable doubt; nor is it difficult to anticipate the important consequences which must flow from it. To discover the cause of disease is the first step towards a cure; and it is by no means chimerical to suppose that a complete system of meteorological observations throughout the United States might be the means of extending the duration of human life.

It cannot, then, be questioned that meteorology is a subject of the greatest practical importance, *provided* it has any solid foundation for a science. If the laws of storms can be discovered, this knowledge must be of the highest importance to mankind, particularly to those who are employed in navigating the sea. If the prevalent character of a season can be anticipated, it would save the husbandman much bitter disappointment from the failure of his crops. If the influence of climate upon disease could be detected, it might add years to the mean duration of human life. What encouragement there may be to anticipate that these results will ever be attained, I shall consider after inquiring—

- II. What has already been done for the promotion of meteorology,
- 1, In the way of making the necessary observations.

Previous to the year 1819, no combined systematic effort had been made in this country for the promotion of meteorology. Registers had been industriously kept by various private individuals, but they were without any concerted action. In 1819, under the direction of the then Secretary of War, John C. Calhoun, a system of meteorological observations was commenced at the different military posts, which has been continued to the present time. This was a highly important movement, and was prompted by a most liberal spirit. It has furnished us with an approximate knowledge of the mean temperature of a considerable number of stations, many of them remote from the more populous parts of the United States. It should, however, be remembered that the instruments provided never exceeded a thermometer and a rain gauge; and the observations, therefore, had of necessity a limited range.

In 1825, a similar system of observations was introduced into the State of New York, almost without modification. Each of the academies incor-

porated by the Board of Regents was furnished with a thermometer and a rain-gauge, and was required to keep a register, after a prescribed form, in order to be entitled to a portion of the public literary fund. This system has now continued for more than twenty years, and the number of academies reporting has increased from ten to forty. The plan was highly creditable to the public spirit and scientific taste of New York. It was a movement in advance of public sentiment in the other States, and the observations were, perhaps, as extensive as it was expedient to undertake at that time. These observations have determined, with considerable accuracy, the mean temperature of the State; and the annual report contains a vast amount of important meteorological statistics.

More recently, Pennsylvania has set an example of the same kind to her sister States. In 1837 the legislature of that State appropriated \$4,000 for the advancement of meteorology; and out of this sum, which was placed at the disposal of a joint committee of the American Philosophical Society and Franklin Institute, a barometer, two common thermometers, a self-registering thermometer, and a rain-gauge, were purchased for each county in the State, to be placed in the hands of some skilful observer who should volunteer to keep a journal of the weather, according to a common form prescribed by the committee. The observations were commenced with little delay, and have been regularly continued. Here are made observations of the barometer and thermometer three times a day; of the self-registering thermometer; the winds estimated for sixteen points of the compass; the depth of rain; and, at some stations, observations of the dew-point.

In the year 1843, the system of observations at the military posts was reorganized upon a scale more in accordance with the claims of science. They now comprise observations of the barometer, attached and external thermometer, wet-bulb thermometer; direction and force of the wind; direction, velocity, and amount of clouds; each at four hours of the day, viz: sunrise, 9 a. m., 3 and 9 p. m.; together with the amount of rain, and the times of its beginning and ending.

Thus it appears we have observations from the general government at about sixty posts, stretching along the entire Atlantic coast, the gulf of Mexico, the Indian territory beyond the Mississippi, and the chain of the northern lakes. Next come the observations of two large States, New York and Pennsylvania. And then we have amateur observers, pretty numerous in New England—scattered more sparingly over the south and west.

I now come to the inquiry, what progress has been made,
2, Towards deducing from these observations general laws.

In the list of philosophers who have contributed to create science out of the crude materials furnished by observation, I shall first mention Mr. Redfield. His first paper on the storms of the Atlantic coast appeared in April, 1831, in volume 20 of the American Journal of Science. This paper gives a full account of the hurricane of September, 1821, which was traced from the West India islands northward along the whole line of our coast. It contained also a notice of the storm of August 17, 1830, and two or three other storms of the same year. From a comparison of all the observations, Mr. Redfield derived the conclusion that those storms were great whirlwinds. In 1833 he published the following general propositions, as embodying the results of his investigations:

1. The severe storms of the Atlantic coast often originate in the tropical latitudes, where they are distinguished by the name of *hurricanes*.

2. These storms cover, at the same moment of time, a surface whose diameter varies from one to five hundred miles, and in some cases they have been much more extensive. They act with diminished violence towards the exterior, and with increased energy towards the interior.

3. While south of the parallel of 30° these storms pursue their course towards the west, on a track which inclines gradually to the northward. In the vicinity of latitude 30° their course changes somewhat abruptly to the northward and eastward, and the track continues to incline gradually to the east, towards which point, after leaving the lower latitudes, they advance with an accelerated velocity. The rate of progress may be estimated at from 12 to 30 miles an hour.

4. The duration of the storm at any place within its track depends upon its extent, and the rate of velocity with which it moves.

5. The direction of the wind over the greater portion of the track is not the direction of the progress of the storm.

6. In the lower latitudes, while drifting to the westward, the direction of the wind at the commencement of these storms is from a northern quarter, usually from northeast to northwest, and during the latter part of the gale, it blows from a southern quarter of the horizon.

7. North of the parallel of 30° , and while pursuing their course to the northward and eastward, these storms commence with the wind from an eastern or southern quarter, and terminate with the wind from a western quarter.

8. On the outer portion of the track, they exhibit at their commencement a southerly wind, which, as the storm comes over, veers gradually to the westward, in which quarter it terminates.

9. Along the central portion of the track, the first force of the wind is from the southeast; but after blowing for a certain period, it changes sud-

denly to an opposite point, from which quarter it blows with equal violence, till the storm has passed over: it is under this portion of the storm that we notice the greatest fall of the barometer, and the mercury usually begins to rise a short time previous to the change of wind.

10. On the inner portion of the track the wind commences from a more eastern or northeastern point of the horizon, and afterwards veers by north to a northwest or westerly quarter, where it finally terminates.

11. Hence Mr. Redfield infers that the portion of the atmosphere which composes the body of the storm blows in a horizontal circuit around a vertical axis of rotation, which is carried onward with the storm, and that the direction of the circuit is from right to left.

12. The barometer always sinks while under the first portion of the storm, and rises again under the last portion of the gale.

In 1835 Mr. Redfield published an analysis of several additional storms which visited the American coast, and accompanied his paper with a chart, upon which eleven of these tracks were carefully represented. In subsequent years Mr. Redfield continued his investigations, and in 1846 he published an analysis of three additional hurricanes, making sixteen storms whose tracks are delineated upon his chart of the Atlantic coast. The results of all these investigations served to confirm substantially the conclusions published in 1833.

In the Journal of the Franklin Institute for April, 1836, Mr. Espy commenced the publication of a series of essays, in which he announced a new theory of storms; and he has since continued his researches up to the present time. The following generalizations, given in his own words, are the latest at which he has arrived:

1st. The rain and snow storms, and even the moderate rains and snows, travel from the west towards the east, in the United States, during the months of January, February, and March, which are the only months yet investigated.

2d. There is a depression of the barometer near the central line of the storm.

3d. The central line of minimum pressure is generally of great length from north to south, and moves sideforemost towards the east.

4th. This line is sometimes nearly straight, but generally curved, and most frequently with the convex side towards the east.

5th. The velocity of this line is such, that it travels from the Mississippi to the Connecticut river in about twenty-four hours; and from the Connecticut to St. John, Newfoundland, in nearly the same time, or about thirty-six miles an hour.

6th. When the barometer falls suddenly in the western part of New England, it rises at the same time in the valley of the Mississippi, and also at St. John, Newfoundland.

7th. In great storms, the wind, for several hundred miles on both sides of the line of minimum pressure, blows towards that line directly or obliquely.

8th. The force of the wind is in proportion to the suddenness and amount of the barometric depression.

9th. In all great and sudden depressions of the barometer, there is much rain or snow; and in all sudden great rains or snows, there is a great fluctuation of the barometer.

10th. Many storms are of great and unknown length from north to south, reaching beyond our observers in the gulf of Mexico, on the one hand, and beyond the northern lakes on the other, while their east and west diameter is comparatively small. The storms, therefore, move side-foremost.

11th. Most storms commence in the "far west," beyond the stations of our most western observers; but some commence in the United States.

12th. When a storm commences in the United States, the line of minimum pressure does not come from the "far west," but commences with the storm, and travels with it towards the east.

13th. There is generally a lull of wind at the line of minimum pressure, and sometimes a calm.

14th. When the wind changes to the west, the barometer begins to rise.

15th. There is generally but little wind near the line of maximum pressure, and on each side of that line the winds are irregular, but tend outwards from that line.

16th. The fluctuations of the barometer are generally greater in the northern than in the southern parts of the United States.

17th. The fluctuations of the barometer are generally greater in the eastern than in the western parts of the United States.

18th. In the northern parts of the United States, the wind, in great storms, generally sets in from the north of east, and terminates from the north of west.

19th. In the southern parts of the United States the wind generally sets in from the south of east, and terminates from the south of west.

20th. During the passage of storms the wind generally changes from the eastward to the westward by the south, especially in the southern part of the United States.

The importance of verifying, modifying, or refuting these generalizations, will appear more fully by a consideration of the following theory

which first led to the adoption of the plan of laying down the phenomena of storms on maps, as here recommended to you:

1st. When the air near the surface of the earth in a particular locality acquires a higher temperature or a higher dew point than that of surrounding regions, it will ascend, on account of a less specific gravity—perpendicularly if there is a calm.

2d. As it ascends it comes under less pressure and expands, and becomes colder by expansion, about one degree and a quarter for each hundred yards.

3d. The dew-point falls about one quarter of a degree, by the expansion of the vapor, for each hundred yards; and, therefore, when the ascending air rises as many hundred yards as the dew-point is below the temperature of the air at the surface of the earth in degrees of Fahrenheit, the cold of expansion of the air will begin to condense the vapor contained in it, and thus form cloud.

4th. As soon as the vapor begins to condense into cloud, the latent caloric will begin to be evolved, which will diminish the cooling effect of its expansion in its further ascent, sometimes a little more and sometimes a little less than one-half, according as the dew-point is above or below 70° of Fahrenheit.

5th. When the air has ascended high enough to have condensed by the cold of expansion, from diminished pressure, one-hundredth of its weight of vapor, its temperature will be about 48° warmer from the evolution of the latent caloric than it would be by going up to the same height without vapor in it, and will then be about 48° warmer than the air around the cloud at the same elevation, and of course about one-tenth lighter.

6th. The air in the cloud being thus specifically much lighter than the surrounding air, will ascend, and, in ascending, spread out in all directions above, overlapping the air of surrounding regions, and thus causing the barometer to rise all round the cloud to a distance proportional to the magnitude of the cloud.

7th. Whilst the barometer is rising all round the cloud from the increasing weight of the air, it will fall under the central regions of the cloud in proportion to the quantity of air spreading out above.

8th. The air near the surface of the earth will now rush in on all sides from the regions around the cloud, where the barometer stands high, towards the central regions, where the barometer stands low, with a velocity proportional to the square root of the difference of pressure.

9th. The air thus rushing in under the cloud on all sides will ascend, and carry up its vapor with it, and will condense it into cloud by the cold

of expansion from diminished pressure, as before, and thus the process of cloud-forming will be continued.

10th. As the principal part of this upmoving current of air is in the upper regions of the atmosphere, which move all the year, over the United States, from west to east, the cloud, with its whole column of light air, must also move in the same direction.

“ Dr. Hare has turned his attention to the electrical phenomena which accompanies the more violent exhibitions of the storm when it assumes the form of a tornado. He agrees with Mr. Espy in opinion as to inward and upward direction of the wind towards the middle of the storm, but differs from him with respect to the cause of the current. He proposes a definite theory of the phenomena of the tornado, founded on well-known laws of electrical action, combined with facts of observation. It has been fully established by experiment in different parts of the earth that there is an accumulation of positive electricity in the upper regions of the atmosphere, that the surface of the earth relative to the lower stratum of air is slightly negative, and that space void of air may be considered an electrical conductor. From these facts Dr. Hare infers that the surface of the earth, the surrounding atmosphere, and the space immediately around and exterior to the atmosphere, form three concentric spheres, of which the outer and inner are constantly charged with opposite electricity. The arrangement is, therefore, precisely that of a charged leyden jar, of which the exterior sphere is analogous to the outer coating, the surface of the earth to the inner, and the intervening atmosphere to the non-conducting glass. The clouds are insulated conductors floating between the two coatings, and therefore liable to be variously charged by induction as their position relative to each other and the two coatings is varied. In some cases the arrangement may be such as to form a series of steps of intermediate conductors, each electrified by induction, so as to produce a violent ascending current or *convective* discharge from the surface of the earth upwards.

“ The theories of Redfield, Espy, and Hare may not be found incompatible in all points; and whatever may be the future state of our knowledge relative to them, they point to definite objects of inquiry, which cannot fail to reward proper observation with a rich harvest of important results.”

The idea occurred to me that more might be learned from a complete analysis of a single storm, than from a partial analysis of several storms; and that any storm of strongly marked characteristics, if fully investigated, must prove a complete *experimentum crucis*, at least between the theories of Messrs. Redfield and Espy. I accordingly selected the storm of December 20, 1836, for a thorough examination. I obtained

barometric observations from 27 different stations within the United States and the neighboring British possessions. I also obtained meteorological journals, not containing barometric observations, from 28 military posts, from 42 academies in the State of New York, and from five other stations; making 102 in all, besides several stations beyond the probable limits of the storm.

In analyzing these materials, the barometric observations were all graphically represented by curves, showing the fall and rise of the barometer, with the time of its minimum height. Then joining by a line all those places where the minimum of the barometer occurred at the same instant, we are furnished with the means of measuring the rate of progress of the great atmospheric wave. On the southern border of the United States, this velocity varied from 17 to 29 statute miles per hour; and on the northern border from 17 to 37 miles. The leading characteristics of this storm were as follows: After a clear and cold interval, with barometer high, the wind commenced blowing from the south. The barometer fell rapidly; the thermometer rose; rain descended in abundance. The wind veered suddenly to northwest, and blew with great violence. The rain was succeeded by hail or snow, which continues but a short time. The barometer rises rapidly; the thermometer sinks as rapidly. These changes are experienced progressively from west to east.

This storm was not circular. The area of rain and snow was about 500 miles broad from east to west. Its length from north to south was known to be 800 miles, and probably was not less than 1,500. For nearly a day before the crisis, the wind blew from the southern quarter, and generally for several hours from the southeast. After the minimum of the barometer, the wind blew with great violence from nearly the opposite point; commonly the northwest. Here was clearly indicated a prevalent tendency of the wind towards a central line; but, unfortunately, the observations embraced only one-half the area of the storm. The oscillation of the barometer showed a steady increase from latitude 25° to Quebec. The centre of the storm, therefore, could not have been south of Quebec, and north of this place we could obtain no observations.

I was now desirous of investigating a storm of marked characteristics which could be *entirely surrounded*, so that more of its features would need to be supplied by conjecture. Two storms which occurred in February, 1842, appeared tolerably well suited to my purpose, and were selected for a new investigation. Great pains were taken to collect materials from every part of the United States. I succeeded in obtaining barometric observations from 64 different stations. I also procured registers, without barometric observations, from 41 military posts, and 22 other stations, ma-

king 127 in all, not including registers from several stations too remote to be of any service in the proposed investigation.

I commenced the analysis of the storm of February 1-5, by following the same course I had pursued with the storm of 1836, viz: representing the barometric observations by curves which should exhibit the fall and rise of the mercury, with the time of minimum height; and from the time of minima I proposed to deduce the progress of the storm. But I was disappointed in my expectations. I did not obtain such a uniform rate of Progress as I had anticipated. After some time I perceived that my observations embraced two centres of disturbance; that I had got at least two storms in close juxtaposition, and interfering with each other. I then discovered that my lines of barometric minimum represented relations which were *extremely complex*, and were not well adapted to my purpose, which was the development of physical causes. I therefore sought for some mode of graphically representing the observations which should be founded upon *simple relations*, and be better adapted to suggest the causes of the phenomena. I at last settled upon a method which appears to me well suited to this purpose, and substituted for lines of *minimum pressure*, lines of *equal pressure*. Having determined, as well as I was able, the mean height of the barometer at each station, I compared each observation with the mean. I then drew a line upon a map of the United States, passing through all those places where the barometer stood at its mean height. This line may be called the line of mean pressure. I then drew a line through all the places where the barometer stood 2 inches above the mean, and another for 4 inches above the mean. So, also, I drew a line through all the places where the barometer stood 2 inches below the mean; another for 4 inches below; and others for 6 inches, 8 inches, and 10 inches below the mean height. These lines must, from the nature of the case, be continuous curves; and the centre of these curves must be a point of maximum or minimum pressure. Near the middle of a great storm we find a point of minimum pressure—that is, *the centre of a vortex*; and the lines of equal pressure will indicate at a glance whatever connexion there may be between the weight of the air and the direction of the wind.

Upon a similar principle, all the observations of the thermometer were graphically represented upon the same chart. A line joining all those places where the thermometer stands at its mean height for the given hour and month is marked zero, and may be called the line of mean temperature. Another line joins all those places where the thermometer is 10° above the mean, and others for 20° and 30° above the mean. So, also, lines are drawn for 10° and 20° below the mean temperature. There are also continuous lines surrounding a point of maximum or minimum ther-

metric disturbance; not points of maximum or minimum temperature absolutely, for we only regard the deviation from the mean temperature of the place for the given hour and month. These barometric and thermometric curves exhibit some conformity to each other, but are far from being identical. The direction of the wind is represented by arrows, and its force is indicated, so far as convenient, by their length.*

Other phenomena are now indicated by *colors*. Those regions where the sky was unclouded, or where the cloudiness was less than one-half, are colored blue; those where the sky was entirely overcast, or the cloudiness exceeded one-half, but without rain or snow, are colored brown. Those regions upon which snow is falling, are colored green; and those where rain is falling, are colored yellow. Thus, nearly every important circumstance of a storm is presented to the eye at a single glance. All these particulars will be understood from the two accompanying charts, illustrating the progress of the storm of February 16, 1842.

In both the storms of February, 1842, after they had acquired considerable violence, there was a prevalent motion of the winds inward, with a tendency to circulate around the centre, in a direction contrary to the sun's motion. The motion of the wind, therefore, was neither wholly centripetal nor wholly rotary, but a combination of the two. As long as the wind was moderate, neither of these tendencies was clearly marked, and there were numerous perplexing anomalies, probably occasioned in many instances by the inequalities of the earth's surface. The storm of February 16 travelled in one day 560 miles in a direction N. 53° E., making its velocity 23 miles per hour. The storm of February 1-5 remained for two days nearly stationary, and then travelled N. 62° E. at the rate of 36 miles per hour. On the whole, then, we may conclude that when storms are violent, and there is a great depression of the barometer, the direction of the wind presents considerable regularity, being spirally inward towards the centre of the storm; but when the winds are moderate, which is the case of most frequent occurrence, this tendency is very fully developed, and the subject demands more particular investigation.

III. I now proceed to inquire what encouragement there is to a further prosecution of meteorological researches.

In all our investigations respecting natural phenomena we assume that the operations of nature are subject to laws, and that these laws are uniform in their operation. A law of nature knows *no exceptions*. There is no place for science except upon this basis. Are storms subject to laws, and are these laws invariable? Such a question may appear almost like

* For an account of the method employed by Mr. Espy in representing the phases of storms, see his communication, appendix No. 3.

tifling, and yet many argue as if they had but feeble faith in these principles. It is presumed that no philosopher will seriously question them; but it may be said that these laws are so complex that they can never be discovered. What right have we to make such an assumption? Have not the laws of nature been actually discovered in many cases in which they appear equally complex? How long is it since comets were believed to rush through the planetary system in defiance of all law; or if subject to law, then a law of such complexity that all attempt to discover it seemed hopeless? Now, these laws appear so simple that we wonder they were not sooner discovered. All the laws of nature appear complex while they remain unknown; but when once discovered, we are surprised at their simplicity. Why should storms form an exception to this rule? Does the past history of meteorological investigations justify such a conclusion? Have our researches been rewarded with no success? Far otherwise. During the brief period that meteorology has been cultivated we have arrived at many important generalizations, which, if not entitled to the name of laws of nature, afford the strongest assurance that such laws exist, and that we are on the eve of their discovery. We have discovered that the great storms of the United States travel nearly from west to east. No instance has yet been found in which a violent storm in these latitudes has travelled from east to west, although some great rain storms have remained nearly stationary for a day or two. Violent storms usually travel at the rate of about 25 miles per hour, although this velocity has been observed to rise as high as 40 miles. These storms are of various dimensions. While summer showers may cover an area of but a few miles, winter storms sometimes have a diameter of 1,000 miles and upwards. The duration of a storm at any place depends upon its extent, and upon the velocity of its progress. If the diameter of a storm is 500 miles, and its progress 25 miles per hour, its duration at a place situated in the centre of the track will be 20 hours, and less for places out of the centre. Hence we may form some estimate of the superficial extent of a storm from its duration at any place. The direction of the wind is generally inward towards the area of rain, and in violent storms there is a tendency to rotation about a vertical axis. Over a rugged country there are so many obstacles to the wind's progress, that observations at the surface of the earth present a great many anomalies; but at sea there are no such obstacles, and the observations of the wind exhibit a greater uniformity and simplicity. The barometer falls under the first half of the storm, and rises as the storm recedes; the centre of the storm coinciding nearly with the greatest depression of the barometer. The passage of this centre is marked by a sudden

change of wind to a point of the compass nearly opposite to that from which it had previously been blowing.

The preceding propositions are deductions from a large number of particular cases which have been investigated. If any one of these propositions requires some modification, the fact will be disclosed by a continuance of the same system of observations. This is a legitimate subject of investigation. Further observations will either prove or disprove these propositions. Some of them may require a little modification, although it is believed they are all substantially true.

We are justified, then, in inferring that storms are subject to laws; that these laws are uniform in their operation, and that they may be discovered. We have already made important progress in this discovery, and we are persuaded that we have only to follow up the same methods of investigation, and our labor will be rewarded with more brilliant discoveries. The results of such knowledge are too important to be overlooked. When we have fully learned the laws of storms, we shall be able to *predict* them. This attainment is of the highest practical importance. If the navigator can anticipate the approach of a storm by 24 hours, this interval will be quite sufficient to place him beyond the reach of its fury; and although the landsman could not remove his habitation from the approaching tornado, he might withdraw his family and the most valuable of his effects to a place of security.

When the magnetic telegraph is extended from New York to New Orleans and St. Louis, it may be made subservient to the protection of our commerce, even in the present imperfect state of our knowledge of storms. The severe winter storms which desolate the Atlantic coast come from the valley of the Mississippi, and require about 24 hours to travel from St. Louis to New York. The approach of a dangerous storm might therefore be telegraphed at New York hours before its arrival, while the sky was yet unclouded and the wind propitious, in season to save a fleet of ships from putting to sea, to be engulfed in the bottomless deep. The science of meteorology is already sufficiently advanced to render important service to commerce, if practical navigators would but heed the indications of the barometer, and make themselves familiar with the principles which observation has established.

It is, then, not without reason that we expect to be able to predict an approaching storm, long enough in advance to render such knowledge of the highest importance; but it may admit of more serious question, whether we shall ever be able to predict the general character of a season with sufficient precision to be of any value to the farmer. But why should we despair of ultimately attaining even this result? If one season is remarkable for

its cold, and another for its heat, is there no reason for it? Is there not some cause acting upon a grand scale to bring about this result? Is there no cause which brings an excess of winds from the north, or an excess from the south—which brings an unusual amount of precipitation, or an extraordinary degree of cloudiness? And cannot this cause be discovered? This discovery may require the exercise of patience—it may require a long continued series of observations; but to assume that a principle cannot be discovered, is unphilosophical. This is a legitimate subject of investigation, and it is a field in which the laborer cannot fail of reaping his reward. We only need adequate observations—observations sufficiently precise, and upon a scale of proper extent. We conclude, then, that there is the highest encouragement to the prosecution of meteorological inquiries—that by continuing our researches we may hope to arrive at general laws, and that a knowledge of these laws cannot fail to contribute to the wealth and happiness of mankind.

I proceed, therefore, to inquire—

IV. Upon what plan the observations should be conducted to secure the object proposed.

Violent winter storms appear most suitable for investigation, because they are of longer duration, and their features are more strongly marked. The oscillation of the barometer affords the surest criterion for identifying a storm in its progress from day to day; and these oscillations are greatest in winter.

1. How large an area should be covered by our observations, to enable us to investigate advantageously the phenomena of our winter storms?

Our observations ought plainly to embrace the entire region of the storm, and even extend somewhat beyond its margin, for in no other way could we be sure that we had found its limits. Now, the great storms which are experienced between the parallels of 40° and 45° degrees are frequently felt as far south as latitude 30°, and sometimes to 25°. South of this line, the oscillations of the barometer, except in a few rare instances, are quite small; and it is probable that the limiting parallel of the trade winds forms a dividing line between the ordinary storms of the torrid and temperate zones. We should therefore extend our system of observations to the southern margin of the United States. The northern limit of our ordinary winter storms remains unknown. In the storm of December 21, 1836, the oscillation of the barometer increased uninterruptedly with the latitude as far as the most northerly station, Quebec. Only the southern half of the storm was included within the United States. This storm was probably experienced as far northward as to the northern shore of Hudson's bay. We should therefore extend our system of observations to the north-

ern margin of the United States; and to render our system complete, requires the co-operation of the British government to extend the observations to the entire region of Hudson's bay.

If we merely wished to embrace in our observations the area of a storm for a single hour, then the interval between the Mississippi and the Atlantic would ordinarily be sufficient. But we could not thus expect to discover the origin of a storm. We must trace it in its progress from its commencement to its greatest violence, and thence to its decline. By observing *under what circumstances* it takes its rise, we may hope to be able to discover the *cause* of its activity. We should therefore aim to trace every storm from its origin to its close. At the ordinary rate of progress a great storm would travel from the Rocky mountains to the Atlantic in two days. What influence this range of mountains may have upon our storms is unknown, except from conjecture. We cannot suppose that a storm could travel from the Pacific to the Atlantic without experiencing some modification in passing over a range of mountains rising into the region of perpetual snow. What this modification is, can be determined by corresponding observations on both sides of the mountain. I therefore conclude that it is important to embrace in our system of observations the entire continent from the Pacific to the Atlantic, and from the gulf of Mexico to the northern shore of Hudson's bay.

2. At what distance from each other should stations of observation be selected?

If we were investigating the phenomena of a summer shower, it would be indispensable to have stations at very short distances from each other; but in winter storms this is less important. I consider it, however, desirable to have stations at intervals of fifty miles from each other, and such might probably be obtained in the more thickly settled parts of the United States. In other parts of the country this would be impracticable; but I would strive to obtain at least one station for every hundred miles square. At this rate we should need about three hundred observers for the United States. It is not doubted that this number might be obtained; indeed, we have well nigh this number already, but, unfortunately, they are very unequally scattered over the country.

3. What materials have we to depend upon, and what is wanting to complete the plan of one observer to every hundred miles square?

We have the government observations at the military posts, now 57 in number. We have observations from 41 academies in the State of New York, and 25 stations in Pennsylvania. Then we have borometric observations from about 40 other individuals scattered promiscuously over the country; and thermometric observations from about 20 others. There is,

besides, a large number of those who have meteorological instruments, which they occasionally consult, but do not feel sufficient interest in the subject to keep a systematic journal. If a grand meteorological effort were made, with a prospect of yielding important results, probably most of those persons might be pressed temporarily into the service. New England is pretty well manned with observers, except in the northern part, where three or four more are greatly needed. Probably, if instruments could be furnished without expense, volunteers might be found to make the observations. New York and Pennsylvania are fully organized; but throughout the remainder of the United States the stations are few and scattered. Excluding Oregon and the Indian territory, the remaining States embrace about a million and a half square miles, and at our lowest estimate would require about 150 observers. We have 50 observers already in the field, leaving 100 to be provided for. How is this deficiency to be supplied? If our government would direct meteorological observations to be made at the principal light-houses along our coast and the chain of the great lakes, it would leave only the interior of the country to be provided for; and if instruments could be furnished without expense, volunteers might probably be found to take the observations at most of the remaining stations.

To extend this system of observations further westward must be attended with serious difficulties. We already have registers kept at most of the military posts in the Indian country; and as new posts are established, it is presumed that the government will direct them to be improved for observations. We may thus hope ere long to obtain a line of stations reaching to the mouth of the Columbia river; and as settlements extend, observations will multiply on the other side of the Rocky mountains. On the whole, then, it is believed we might occupy the whole United States from its northern to its southern border, and from the Atlantic to the Indian territory, beyond the Mississippi, with an army of meteorologists sufficiently numerous to enable us to investigate advantageously the phenomena of our great storms, provided instruments could be furnished gratuitously for about 100 stations; and, moreover, we might probably have a line of observers at unequal intervals, reaching even to the Pacific ocean. The expense of 100 sets of meteorological instruments may be estimated at \$3,000.

It is believed that the Smithsonian Institution might undertake to furnish these instruments and organize a grand system of meteorological observations upon this continent, in perfect harmony with the views of James Smithson. Mr. Smithson bequeathed his property, in trust, to this country, *for the increase and diffusion of knowledge among men*. It is believed that by carrying out the plan now suggested, knowledge would be increased and diffused, and it would be that kind of knowledge which

would contribute to the comfort and happiness of society, as much as perhaps any other which can be named.

4. Specific plan of operations proposed.

The following is proposed for the consideration of the Regents of the Smithsonian Institution, as the outline of a grand meteorological campaign.

Let a meteorological department of the institution be organized, under the direction of the Secretary, with a suitable assistant. Let a united effort be made to secure for a limited period, and to the greatest possible extent, the co-operation of the general government, the several State governments, scientific societies, and the friends of science throughout the country. Let the general government be requested to give the greatest possible extension to their system of observations at the military posts, and to authorize similar observations to be made at certain light-houses, so far as may be necessary to complete a line of stations at intervals of 100 miles along the whole extent of our coast, and the chain of the northern lakes. Let the regents of the University of the State of New York be requested to reorganize the system of observations in that State, by furnishing barometers to about 20 of their academies, and directing the observations to be reported regularly to Washington. Let the committee having charge of the observations in Pennsylvania be requested to adopt the same plan of observations which shall be agreed upon for the other States, and report regularly to Washington. Let application be made to the legislatures of each of the other States, inviting them to co-operate in this noble scheme, by emulating the examples of New York and Pennsylvania. Let the scientific societies throughout the United States be appealed to, to assist in organizing an efficient corps of observers, each in its appropriate sphere; and let individual observers throughout the country be requested to unite their efforts in one uniform and systematic plan of operations. Let them be requested to report their equipment of instruments, and state whether they will undertake to provide whatever may be wanting, at their own expense. Let then the entire country be divided into sections not exceeding 100 miles square; and in each section not already provided for, let an observer be sought out, who shall volunteer to make the observations if instruments are furnished him. Let then the Smithsonian Institution assume the burden of furnishing the necessary instruments to those who are unable to do it themselves. It is estimated that the sum required for this purpose would not exceed three thousand dollars. Let a form of observations be provided, and instructions to all the observers, who shall report at least quarterly to the Secretary at Washington. Let it be the duty of the meteorologist to take charge of the observations, to discuss and analyze them, and endeavor to deduce from them the laws of storms. Let

these investigations be published, in as much detail as may be thought demanded by the claims of science, and let a copy of whatever may be published be forwarded to each observer, in order that he may be stimulated in his work by finding that his labor is not wholly in vain.

Finally, to give to this system its greatest efficiency, the co operation of the British government and of the Hudson's Bay Company is absolutely indispensable. The greater part of our severe storms extend far beyond the limits of the United States on the north. Observations confined to the United States will therefore seldom give us the entire area of a storm, and frequently only half of it. The remaining half must then be supplied by conjecture. This would leave all our investigations in an unfinished and unsatisfactory state. We want a line of stations through Canada, along the shores of Hudson's bay, to the farthest outpost of civilization. At every government station a meteorological journal might doubtless be kept: and it is confidently believed that if the Smithsonian Institution would embark in earnest in a grand meteorological crusade, the British government would cheerfully contribute its efficient co operation.

A system of observations like that here contemplated, if faithfully prosecuted for one year, would well nigh exhaust the subject. The storms of each year are probably but a repetition of those of the preceding. Nevertheless, it would be unsafe to calculate upon concluding the war after a single year's campaign. Experience in similar cases has shown that it requires considerable time to organize so large a plan of operations, and the system would not, probably, attain its greatest efficiency the first year. It would be unwise, therefore, to calculate upon a less period of operations than three years. But it is believed that in this period, results would be developed which would more than repay all the expense of time and money incurred; while, upon the existing scale of operations, the progress of discovery must be slow and uncertain. In order to enable us to investigate advantageously the phenomena of a single storm, we must have simultaneous observations from a vast number of stations. Observations from a few stations, though continued to the end of time, will not accomplish the same object. How, then, can the Regents of the Smithsonian Institution more faithfully carry out the views of its benevolent founder, than by vigorously prosecuting these researches to their completion? How can they contribute more directly and powerfully to the prosperity of our commerce; and, through commerce, add to the wealth and happiness of the whole country?

I remain, very respectfully, your obedient servant,

ELIAS LOOMIS.

JOSEPH HENRY, LL. D.,
Secretary Smithsonian Institution.

Extract from a communication from Professor Espy on the subject of Meteorology.

MY DEAR SIR: I am much pleased to learn from your letter that the Regents of the Smithsonian Institution would probably make an appropriation for the purpose of establishing a series of observations "to solve, if possible, the problem of American storms." I am of opinion that no subject of science is more worthy of the attention of the institution; and in answer to your request that I should furnish you with suggestions on the subject, I refer you, in the first place, to my work entitled "Philosophy of Storms," from page 77 to page 172, for a full development of the plan adopted twelve years ago of investigating the phases of storms, by the joint committee of the American Philosophical Society and the Franklin Institute, of the State of Pennsylvania.

The plan then suggested, and in part carried out, was adopted in the investigation of the phases of storms during the five years in which I was in the service of the government. In my "circular to the friends of science," in which I invited all persons in the United States keeping journals of the weather to send them to the office of the Surgeon General, Washington, I announced my intention to lay down on skeleton maps of the United States, by appropriate symbols, all the most important phases of great storms which might come within the range of our simultaneous observations; and thus it was hoped we should be able to determine the *shape* and *size* of all storms; whether they are *round* or *oblong*; and if oblong, whether they move *sideforemost* or *endforemost*, or *obliquely*; and to ascertain their *velocity* and *direction* in all the different seasons of the year; the *course* of the wind in and beyond the borders of the storm; the *fluctuation* of the barometer and *change* of temperature which generally accompany storms, and the *extent* to which their influence is felt beyond their borders.

Having obtained observations from a wide extended correspondence, I laid down the phases of the storms on maps, as presented in my first report, and I have continued the same plan in my second report, now ready to be printed. In the investigation of the materials of the second report, comprising the observations of three years and three-quarters, I have discovered no facts contradictory to the generalizations deduced from the winter storms of three months embraced in the second report. I consider it of the highest interest, by an extended series of observations, which I hope the Smithsonian Institution will cause to be made over a much wider

territory than my observation embraced, to verify, or, if necessary, modify these generalizations, and also to investigate the laws of summer storms, which I fear cannot be done without much more numerous observers than I was able to procure.*

The elements of the theory I have given you are the same as those presented in my work on storms; and though I have demonstrated them approximately, and have no doubt of their general accuracy, yet I am convinced that nothing will establish the truth on this subject in such a manner as to carry conviction to every mind but a series of wide extended simultaneous observations, continued for a long time, by numerous observers. Such a series I hope is now about to be made.

It would be inappropriate to extend this communication to a greater length; but I will explain to you at another time some experiments connected with meteorology, which I wish to see performed, on the electricity of steam, and on the specific caloric of atmospheric air and other gases, with the aid of my nepheloscope, and on the law of cooling of air in great expansions of air by diminished pressure.

I remain, very respectfully, yours, &c.,

JAMES P. ESPY.

Prof. J. HENRY,

Secretary Smithsonian Institution.

* The generalizations and theory of Mr. Espy are given in the preceding report of Professor Loomis, page 33.

REPORT
OF THE
BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION,
SHOWING
The operations, expenditures, and condition of the Institution.

JANUARY 6, 1848.

Ordered to be printed.

To the Senate and House of Representatives of the United States :

In obedience to the act of Congress "to establish the Smithsonian Institution, for the increase and diffusion of knowledge among men," the Board of Regents herewith submit to Congress a report of the operations, expenditures, and condition of the institution, with sundry accompanying documents.

These documents embrace a complete record as well of the operations of the institution since the date of the last annual report to Congress, as of its expenditures, and of its present condition.

They are as follows:

No. 1. Report of the building committee to the Board of Regents, accompanied by a copy of their journal from the date of the appointment of the committee to the 1st December, 1847.

No. 2. Copy of the journal of the building committee, referred to in the foregoing.

No. 3. Report of the Executive Committee, containing a statement of the expenditures of the institution from the organization of the institution to the 1st December, 1847.

No. 4. Proceedings of the Board of Regents, from the date of the last annual report to the 22d of December, 1847.

No. 5. Report of the Executive Committee to the Board of Regents, dated December 15, 1847, embodying a statement of the present condition of the funds of the institution, and the proposed scale of annual expenditure until the completion of the building.

No. 6. Report of the Secretary of the institution to the Board of Regents, containing a programme of organization of the Smithsonian Institution, presented to the board December 8, 1847.

Document No. 1 will be found to contain a condensed statement of the proceedings of the building committee, compiled from their journal; by which it will be seen, that in the discharge of their duty they had occasion to collect, and record, a variety of information of practical value, especially on the subject of building-materials. The result, in their own case, has been, that they have obtained for the institution building a free-

stone superior, both in durability and appearance, to any heretofore used in the public buildings of this city, yet costing less than one-half as much as that employed in the erection of the Capitol, Executive mansion, Treasury building, and Patent Office. Attention is respectfully invited to these results, as they can hardly fail to be important to the public service if the general government, at any time hereafter, should add to the number of its buildings in this metropolis.

Document No. 2 gives in minute detail the results above referred to. It contains reports from an experienced geologist, on the marble and granite quarries of Maryland; on the Aquia creek quarries, which have hitherto furnished the material for the principal structures in this city; and on the freestone quarries of the upper Potomac, in the vicinity of Seneca creek, whence has been drawn the lilac-gray freestone employed by the committee, for the institution building. It contains also a report, by a chemist of this city, of the results of certain experiments which the committee caused to be instituted, to determine the durability of various building materials when exposed to the action of the weather.

This document contains, further, a copy of the contract made for the erection of the institution building, together with the specifications of the same. It will be perceived that the contract was taken at a rate less, by about thirty-seven thousand dollars, than the amount set apart by the board, for the erection of the building.

In this document will also be found several other contracts made by the committee; among them, one with Messrs. Wiley & Putnam, publishers of New York, for the publication of a brief treatise on public architecture, to be illustrated with plans and designs of the institution building, and to contain the result of a series of experiments which have been set on foot by the institution, to determine the economical value of the principal building materials throughout the United States.

It also contains an address by the Chancellor of the institution, delivered on occasion of laying the corner stone of the building; and embracing a succinct view of the objects and the general proceedings of the institution, together with some details touching the style and dimensions of the building, then about to be commenced.

Document No. 3 gives a table of the expenditures of the institution, under the various heads, since its commencement. The entire expenditure is \$37,670; of which about two-thirds were spent for the building and incidentals therewith connected, and one-third for other objects: among the latter, upwards of two thousand dollars for books and philosophical apparatus; about two thousand dollars for salaries of officers; thirteen hundred for premiums for designs for the institution building; and \$3,876 for expenses of the board and its committees. This last item has been considerably swelled in consequence of the provision, in the act organizing the institution, that its first meeting should be in September, when Congress was not in session, and when, consequently, the travelling and other expenses of all its members, fifteen in number, and some residing at a great distance, had to be paid; those of two members only excepted, who were residents of the city. To prevent the recurrence of such expense, the board, as will be seen by reference to its journal, has arranged its regular meetings to take place during the session of Congress, restricting them to one only each year; and as at that time all the members of the board, except four, become residents of the city, incurring no additional expense

by attending to their duty as Regents, and therefore charging to the institution no expenses, the annual expense of the board will hereafter be very small compared to what it has been: it cannot reasonably be estimated beyond eight hundred or one thousand dollars annually.

This item of expenditure has also been increased by the necessary expenses of a committee appointed to visit and report upon public structures in the principal cities of the Union, and to confer with architects, with a view to the selection of convenient plans, based upon the act of Congress, and of a suitable style of architecture. It is believed, that when the institution building shall be completed, Congress and the public will be satisfied with the result of these labors.

Some expense will annually be incurred by the building committee, until the completion of their task. But, as two of the members of the committee are residents of Washington, that expense will not be large; and will, it is believed, be repaid by the amount of information collected and recorded by them, and by the volume now preparing for publication.

Document No. 4 is a record of all the important proceedings of the Board of Regents, extracted from their journal, and continued from the close of their proceedings, as given in the last report of the board to Congress, down to the end of their last meeting. There will be found, among other resolutions passed by the board, one making appropriations for the current expenses of the institution throughout the coming year; also, the action of the board upon the series of resolutions establishing a scale of expenditure for the next four years.

Document No. 5 is the report of the Executive Committee, in which is proposed to the board a plan of financial operations, and scale of expenditure, for four years from and after the 19th of March next—that is, during the last four years of the building contract; according to which plan, the sum of fifteen thousand dollars may annually, throughout that term, be appropriated for the current expenses of the institution; and the building may be completed and furnished, and the grounds laid out and fenced, without withdrawing from the amount of so-called accumulated interest—to wit: \$242,129, specially made applicable by Congress to the building—more than \$102,000, and thus leaving \$140,000 of that sum to be added to the original principal or bequest, as a permanent investment.

Document No. 6 is the first report of the Secretary of the institution. The programme of the organization, given therein, embraces as well the general considerations which have served as a guide in adopting that organization, as the details both of the plan to *increase* and of the plan to *diffuse* knowledge. The report of the Secretary elucidates and explains the programme, and also contains a statement of the progress made in the preparation of the first volume of the Transactions of the institution; in the purchase of apparatus, the preparation for original researches, with suggestions as to the operations of the next year, &c., &c.

The board respectfully express the hope that Congress will cause to be published, along with this report, these several documents.

All which is respectfully submitted.

G. M. DALLAS,
Chancellor of the Smithsonian Institution.
JOSEPH HENRY,
Secretary.

DECEMBER 31, 1847.

No. 1.

Report of the Building Committee of the Smithsonian Institution.

The committee submit to the board, as a complete record of their proceedings from the date of their appointment, on the 5th of February last, to the 1st of December current, a copy of their journal.

By reference to that journal, the board will perceive that the committee, in discharge of their duty, were led into a somewhat extended field of inquiry, especially as regards building material; and that they have been enabled to collect, and have duly recorded, a large amount of detailed information on this subject essential to their own guidance, but also, they believe, important to the public generally, and especially to the government, if Congress should decide to erect any other public buildings in this city. They caused to be examined the various marble, and granite, and freestone quarries within a moderate distance of Washington, having been fortunate enough to engage the services of a gentleman of practical experience as a geologist, and who tendered these services gratuitously, his necessary travelling and other expenses only being paid.

The examination embraced the chief marble and granite quarries of Maryland; the freestone quarries of Aquia creek, Virginia, whence the material has been drawn for the construction of the Capitol, President's house, Treasury building, and other public structures in this city; and the freestone quarries of the upper Potomac, chiefly in the vicinity of Seneca creek, on the banks of the Chesapeake and Ohio canal, and about twenty-three miles from the city.

The results of this examination, as contained in reports made by the geologist, and which will be found spread at large on our journal, were briefly these:

1st. That the marble quarries of Maryland, chiefly in the vicinity of the village of Clarksville, about thirteen miles from Baltimore, on the line of the Susquehanna railroad, contain two qualities of marble: one fine grained and of beautiful uniform color, approaching the character of statuary marble; the other, of inferior quality, similar to the Sing Sing marble employed in New York, in Grace church and other public structures, of a somewhat coarse and highly crystalline structure, and known to the quarrymen here under the name of "alum limestone." The former was confidently recommended as a building material equal in durability to any in the world; the latter was pronounced inferior, both in beauty and durability, yet capable of furnishing a very lasting material if the selection was made with care. Being less tough than the finer-grained variety, it was thought less suitable for ornaments having bold projections, and somewhat liable to chip off where there was much undercutting.

2d. That the granite quarries of Maryland, in the vicinity of Woodstock, on the line of the Baltimore and Ohio railroad, and about sixteen miles beyond the Relay House, furnish a granite equal to that of Quincy, and not excelled for beauty of appearance, compactness of structure and uniformity of color, texture, and composition, by any granite in the United States; splitting, also, with remarkable facility, so that on a block twelve or fourteen feet in length the face of cleavage may not vary more than a

single inch from a true level; in short, a building material of unsurpassed durability and uniformity, and to which, as to the finer-grained marble in the Clarksville quarries, no possible objection, except on the score of expense, could be found, unless, indeed, it be considered one, that in this material the effect of light and shade from projecting surfaces is in a measure lost, while in marble and good tinted freestone every shadow is sharply marked.

3d. That the Aquia creek freestone, heretofore used in public buildings in Washington, is a material not to be trusted to, being pervaded by dark specks of the protoxide and peroxide of iron, which in peroxidating acquire a yellowish or reddish color, and having occasional clay holes, such as disfigure the Treasury and the Patent Office. A portion of this freestone was, indeed, considered durable and free from material blemish; but the chance of actually procuring it free from disfiguring spots and stains was considered so uncertain, that it was recommended to refrain from using it in the institution building.

4th. That the freestone of the upper Potomac, in the vicinity of Seneca creek, and found in quarries close to the line of the Chesapeake and Ohio canal, is the best and most durable of all the Potomac freestones.

The lilac-gray variety found in the Bull Run quarry, twenty-three miles from Washington, was especially recommended, and pronounced to be equal, if not superior, to that supplied for Trinity church, New York, from the quarries of New Jersey.

In regard to this latter material, it was stated that it possessed a quality that should especially recommend it to the attention of builders. When first quarried it is comparatively soft, working freely before the chisel and hammer; but by exposure it gradually indurates, and ultimately acquires a toughness and consistency that not only enables it to resist atmospheric vicissitudes, but even the most severe mechanical wear and tear. Thus, on the tow-path of the aqueduct, near Seneca creek, over which horses and mules have been travelling almost daily for upwards of twenty years, this freestone was found still unimpaired. Even the corners around which the heavy lock-gates swing, showed no signs of chipping or decay; and on the perpendicular wall of the aqueduct, where the water is continually oozing through the joints and trickling down its face, forming an incrustation of carbonate of lime, this freestone was observed, where the calcareous crust had scaled off, with the grooves and ridges of the surface still nearly as distinct as when the blocks first came from the hands of the stone-mason, more than twenty years ago.

The rare and valuable quality possessed by this freestone, of hardening by exposure to the weather, and which may be due to iron in its composition, passing from a lower to a higher degree of oxidation, is occasionally found in building-stone on the continent of Europe; as, for example, in a calcareous freestone which has been excavated for centuries from St. Peter's mountain, near Maestrich, in Belgium. It is highly prized wherever found, as this peculiarity permits the freestone to be wrought at considerably less expense than either granite or marble, and imparts to it a durability increasing with age.

Further to test the durability of these various building materials under exposure to the vicissitudes of the seasons, specimens of each, and also of other building-stones from New York and elsewhere, were handed to a gentleman of this city experienced in chemistry, and having a laboratory

at command, and he was requested to subject these to a process recommended by Brard, a French chemist, and described in the "Annales de Chimie et Physique;" according to which, the crystallization of the sulphate of soda is substituted for the freezing of water; and thus, by artificial means, the action of the elements on these materials—the alternate freezing and thawing to which the external component of a building is in this climate annually subjected—is in a measure imitated. The result—which, however, in consequence of the short time which could be allowed for the process, must be considered an approximation only to the truth—is given in a report from the gentleman in question. The specimens were reduced to inch cubes; and it was found, after four weeks, that a cube of granite had lost about *one-third of a grain*; a cube of the fine-grained marble about *one-fifth of a grain*; a cube of the best quality of the "alum-stone," or coarser-grained marble, *half a grain to a grain and a half*; and a cube of freestone from the Patent Office, which, however, was judged not to be a fair average specimen of the Aquia creek freestones, lost *eighteen grains and a half*. Freestone from Trinity church lost from *two-thirds of a grain* to about *a grain and a half*. The brown Connecticut stone, freely used in New York, lost from *fourteen* to nearly *twenty-five* grains. Coarse-grained New York marble, from Mount Pleasant, lost *nearly a grain*; Nova Scotia coarse-grained sandstone about *two grains*; while Pennsylvania blue limestone lost little over *a quarter of a grain*.

As to the relative cost of the Maryland granite, Maryland marble, fine-grained and coarse-grained, Aquia creek freestone and Seneca creek freestone, it was found, from the report of the geologist and from actual offers made to the committee by owners of quarries, and which will be found recorded in the journal of the committee, to be, per cubic foot of dimension stone delivered in Washington, as follows:

1st. For coarse-grained marble with large crystals, commonly called "alum-stone," from *fifty to sixty cents*, according to quality.

2d. For fine-grained marble, the lowest offer was *seventy cents*.

3d. For granite, *forty-six cents*.

4th. For Aquia creek freestone, *forty cents*. The material used in the public buildings in Washington, in blocks of ordinary size, has cost from *forty to fifty cents*.

5th. For Seneca freestone, the lilac-gray variety, from Bull Run quarry, *twenty cents*. A contract has been made by a gentleman of Washington, not connected with the institution, to have stone from the Seneca creek quarries delivered to him in the city at that price.

East Chester marble was offered at *seventy-five cents*.

The committee ought here to state, that the proposals by owners of granite and marble quarries in Maryland to deliver material for our building were at a considerably lower rate than they otherwise would have been, in consequence of the liberality evinced by the directors of the Baltimore and Ohio railroad, and of the Baltimore and Susquehanna railroad, towards the institution. The chairman of the committee had an interview with Mr. McLane and Mr. Howard, the presidents of these railroads, and the directors of both companies passed resolutions, that if we decided to use Maryland marble or granite, they would transport it at the rate of *two and a half cents* per ton per mile, instead of *four cents*, the usual charge for the transportation of similar materials. As it happened, the committee had no occasion to avail themselves of this liberal proposal; but it doubtless

materially influenced the amount of the bids subsequently put in for the erection of the building in marble and granite.

Such is a brief summary of the measures adopted by the committee, and of the information collected by them, and which will be found in detail on their journal, on the important subject of building material. While engaged in collecting that information, they caused to be inserted in the city journals, advertisements inviting from contractors proposals for the erection of the institution building; the external walls to be of upper Potomac freestone, or of marble, or of granite, or of blue gneiss; and separate proposals were requested in each of these materials. Meanwhile the architect and superintendent attended in the office of the institution with specifications, ready to give the necessary information to all applicants.

The day originally set as the last on which bids would be received, was the 10th of March; but as the specifications were delayed by the printers several days beyond the time appointed by the public advertisement for the inspection of bidders, the committee extended the time for receiving bids to the 15th March.

On the 16th of March the bids were opened, in presence of the building committee and of the architect and superintendent. A number of these were found to be proposals to deliver materials only, or to execute a small portion of the work, as the brick work, alone; the stone cutting at so much per foot, &c. These are spread on the journal of the committee, and will be found to contain much valuable information as to prices.

The bids to erect the building were found to be fourteen in number, and to vary in amount from \$196,000 to \$318,000—the lowest being that of James Dixon & Co., of Washington, and the estimate being for Seneca freestone, laid up in rubble masonry. The bids by the same firm, as given in the explanatory correspondence of the same date and in a personal communication on the 18th March, for *ashlar* finish, were also the lowest put in, namely:

For marble ashlar	-	-	-	-	-	\$228,500
And for Seneca freestone ashlar	-	-	-	-	-	205,250

After a careful examination of the subject, the committee decided, that to the particular design as adopted by the board, with its numerous vertical lines often closely approaching each other, the finish of regularly coursed ashlar was the best suited, and would make a more substantial job than broken rubble.

They concluded also, that, with a complete conviction on their minds of the durability of the Seneca freestone, and with a doubt whether it did not assort even better with the Lombard style of architecture adopted than marble, it was inexpedient to expend twenty-three thousand dollars additional to obtain the latter material. They informed James Dixon & Co., therefore, that their bid of \$205,250 for the erection of the building in Seneca stone, finished in coursed ashlar, was accepted.

The result, your committee think, has proved that their selection of material was a judicious one.

On inquiry, the committee found that the firm of James Dixon and Co. consisted of James Dixon, of Washington, and Gilbert Cameron, of New York. The latter gentleman executed a portion of the work on Trinity church, and was a contractor on Calvary church, New York.

A contract was signed by the committee and by Messrs. Dixon and Cameron on the 19th of March. It will be found, accompanied by the speci-

valances, which make part of the same, on the journal of the committee. It includes a portion but not the whole of the furniture; the portion included, however, being the most expensive part of it, and comprehending the shelving cases, desks, drawers, and tables, in the laboratory and apparatus room; the book-cases, large tables and alcove desks, in the library; the glass cases in the museum; the seats in the lecture-rooms; the elevators, with shelves and counter-weights; water closets, completely fitted up; rain-water cisterns; and the chairs and table in the Regents' room. Flues for heating and ventilation are provided for, but the expense of heating and lighting is not included. Cess-pools are included, but no provisions for draining, according to the municipal regulations of the city.

The foundation walls, under the main central towers, are twelve feet thick at bottom, gradually diminishing to five and a half feet at the surface of the ground, and are sunk eight feet deep. The foundations of the rear central tower, excavated to the same depth, are ten feet, diminishing to five feet; of the campanile and octagonal towers also ten feet, diminishing to five and six feet deep. The thickness of the walls of the main building, above the water-table, is two feet and a half in the first story, and two feet in the second, exclusive of buttresses, corbel-courses, and other similar external projections, and exclusive, also, of an internal lining wall of brick, of the thickness of a single brick, tied at intervals to the wall, and intended to plaster to. The walls of the wings are two feet thick. The central towers are three feet and a half thick in the first story, diminishing to two feet in the highest story.

Tunneled arches, of hard brick, are turned under all the openings of the foundation. Groined arches are turned under the central towers, the campanile, the octagonal tower, and the tower of the west wing.

The ashlar facing of the building is to be laid in courses from ten to fifteen inches in height, with a bed of nine inches, and the joints to be nowhere over three-eighths of an inch.

The basements, to contain the heating furnaces, also the janitors' rooms and the room to receive Smithsonian's personal effects, are fire-proofed. A pine floor, covered two inches thick with cement, is carried under the roofs of the whole building. The floors, where they are not fire-proofed, have a deafening of lime, clay, and sand.

The central stair-cases, front and rear, are to be of stone to the museum floor. The floor of the gallery of art, embracing the west wing and its connecting range, of the laboratory, including the east wing and part of its connecting range, of the central hall and the vestibules, also the floors of the basement under the laboratory, under the central towers, under the campanile and other towers, together with the cloisters, are to be flagged with North river flagging. The floor of the principal lecture-room will also be flagged with flags, supported on brick cross-walls. The floors of the library and museum are to be of pine: and it is not proposed that either of these two rooms should be artificially lighted.

The laboratory wing is to be roofed with slate—the rest of the building, as the contract now stands, with sheet tin; but the committee propose to roof the main building and west wing with slate, paying the difference.

It was made a condition of the contract that the erection of the building should occupy a period of five years from its date, that term ending on the 19th of March, 1852. It was also agreed that the building should be erected in such proportions, during each year, as the committee might

direct, but so that the payments to the contractor in each of the first four years of the contract should not exceed an annual amount of \$41,000; and so that the wings and connecting ranges should be completed in two years from the date of the contract. Fifteen per cent. on the architect's estimates is kept back until the completion of the building; but interest is to be ultimately paid on this per-centage, calculated from the dates of the several estimates.

On the suggestion of one of the Regents, not a member of the committee, and of the Secretary of the institution, a supplement was appended to the contract, by which it was stipulated, that if the Board of Regents should hereafter determine to make important alterations in the plan of building, or in the time of its execution, then the contractor was to be paid pro rata, according to the prices in the contract, for work executed, and reasonable damages, if the nature of the case should justly demand it. In case of dispute as to the amount, the matter to be referred to the architect of the institution, or any other architect selected by the committee.

The contractors gave as security for the faithful performance of the contract, W. H. Winter, of Washington, and Horace Butler, of New York. The security was approved by the committee; and a bond, with a penalty of fifty two thousand dollars (being one-fourth of the amount of the entire contract) was executed accordingly.

The corner-stone of the building was laid on the 1st of May. The details of the ceremonies upon that occasion, including the address delivered, in accordance with an invitation from the committee by the Chancellor, and which ceremonies were witnessed by six or seven thousand persons, will be found at large on the journal of the committee.

The contractors proceeded for some time with the work in partnership; but on the 1st of June Mr. Dixon informed the board that the work would thereafter be conducted by Mr. Cameron alone; and since that time, it has been entirely managed by that gentleman.

Mr. Cameron has since proceeded in the work with spirit, and has executed it, upon the whole, in a manner satisfactory to the committee. Occasional departures from the letter of the contract have been pointed out to him, and he has promptly remedied whatever was complained of. He is now covering in the east connecting range, and hopes still to cover in the east wing, also, before he shall be arrested by frost; though he has been very much retarded in his operations, and has suffered some pecuniary loss by the breakage in the canal, caused by the late freshets. Since the 7th of October, when the first damage was done, until now, the canal has been closed, and not a perch of stone has been received. In another week or fortnight there is a fair prospect that the damage may be repaired, and water let into the canal. But for this accident, the contractor would already have covered in the east wing of the building. He has now some twelve or fifteen thousand feet of stone lying ready quarried, and awaiting the re-opening of the canal.

The chairman of the committee recently visited the quarry and found the stone that had been quarried of excellent quality and color, the tint somewhat lighter than the average tint of the present building. Its quarries with remarkable facility, and the supply is unlimited.

The contractor has commenced to lay the foundations of the west wing and west connecting range, but nothing whatever has yet been done towards the erection of the main building.

The style of architecture selected by the board seems to meet with general approval. It may be taken as one evidence of this, that a church now in progress of erection in Stuyvesant square, New York, and of which the cost will reach some hundred and fifty thousand dollars, is built in the same style; as, by a perspective view of the same herewith submitted, the board will perceive.

The lot belonging to the institution has been fenced in with a paling fence, whitewashed, which will last at least until the termination of the contract for the building. No measures have yet been taken for the erection of a permanent fence.

Water has been conveyed to the site of the building by tapping the fire plug at the engine house in Market square. The pipe is a strong leaden one, of inch-bore, laid two feet below the ground, and the water is conveyed across the canal in an iron pipe of two-inch bore.

The contract for the fence was taken by Joel Downer, and that to convey the water by Caleb Buckingham, both of Washington. A copy of their respective contracts will be found on the journal. After completing the work in a satisfactory manner, both of these gentlemen applied to the committee for extra compensation. Mr. Downer stated that the fence erected by him cost much more than the amount at which he contracted to complete it, and which was paid to him; and at one time during its progress—to wit, on the 22d of May—he offered to relinquish to the committee all he had done, if they would release him from the contract. This, however, they declined to do.

Mr. Buckingham handed in a bill of his expenses, showing a larger amount expended than that which, in accordance with the terms of his contract, was paid to him, and alleged that he had laid down a heavier pipe than by the contract he was required to do. On these grounds, he put in a claim for additional compensation. The committee declined to allow it, but informed Mr. Buckingham that the matter would be by them referred to the Board of Regents.

The board will find the particulars of this case, and of that of Mr. Downer, in the minutes of their thirty-fourth meeting; and the committee beg to refer both cases to the board, for their decision as to whether in either case relief ought to be granted.

The total amount expended on the building and on the fencing of the lot up to this date, the 1st December, including superintendence and all incidental expenses therewith connected, is \$25,002 67, namely:

Paid to Cameron, contractor	-	-	-	-	-	-	\$20,840 00
Buckingham, supplying water to building	-	-	-	-	-	-	650 00
Downer, for fence, \$400; additional rail subsequently added,							
\$60; whitewashing the same, \$60	-	-	-	-	-	-	520 00
For architect's office	-	-	-	-	-	-	200 00
Coal bin	-	-	-	-	-	-	10 00
Corner-stone	-	-	-	-	-	-	9 00
Superintendence, including incidentals therewith connect-							
ed, and allowance to architect for original plans	-	-	-	-	-	-	2,773 67

Total to 1st December, 1847	-	-	<u>\$25,002 67</u>
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The committee has made a careful estimate of the probable expenditure for the building and lot, all incidentals included, from the 1st December,

1847, to the 19th March, 1848, being the end of the first year of the building contract, and set it down at \$10,467 50, thus:

Payments to contractor, about	-	-	-	-	-	\$9,500 00
Superintendence and contingencies, about	-	-	-	-	-	967 50

Total from 1st December, 1847, to 19th March, 1848, about		<u>\$10,467 50</u>
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These two sums added together will give the total amount expended and to be expended for the above objects, from the commencement of operations to the end of one year from the date of the contract, about \$35,470 17.

It will be observed that the amount paid and to be paid to the contractor within that year, will be less than thirty-one thousand dollars; that is, upwards of ten thousand dollars less than the annual payments to which, by the contract, the contractor is restricted.

The item of superintendence, with its incidentals, is a considerable one. It is larger this first year than it will be in any subsequent one: first, because of an allowance of about two months' salary to the architect, not in payment of his design, but to repay the actual expenses incurred during these two months and previously, in the mechanical execution of plans and sections of the building, including those which embodied the modifications of the original design suggested by the committee appointed on the 9th September, 1846, and subsequently adopted by the board; and, secondly, because it was necessary to engage the services of the architect and superintendent about a month before the actual signature of the contract.

The annual expense of superintendence is necessarily increased by the circumstance that the architect does not reside in Washington. The committee could not afford to offer him a salary which might have induced him to abandon his New York business; and as in consequence he could be present during a portion of his time only in this city, the alternative was presented to them either to leave the work, during his absence, under the control of the contractor, trusting wholly to his judgment and to his scrupulous observance of the contract, or to engage the services of a superintendent who might be always on the spot, to see that no faulty materials nor insufficient work was admitted into any portion of the structure. They considered this latter the more prudent course, and engaged as superintendent a gentleman of much experience as an architect and builder, at a salary of \$1,000 a year. To the principal architect they gave eighteen hundred a year and his travelling expenses—which, as he usually passes between New York and Washington once a month, amount to about three hundred a year—together with actual expenses for stationery, being from fifty to a hundred dollars annually.

In connexion with this item of superintendence, the committee remark, that the labor and expense of preparing working plans in a style so novel as the Lombard, and for a design so irregular as that which has been adopted, are very much greater than if the style were one common in this country, or the design characterized by greater regularity.

The expenses necessarily incurred by the building committee—which, however, are small, as one member only of that committee is a non-resident of Washington—are not included as part of the expense of the building; both because a considerable portion of their attention was directed to objects other than the building, hereafter to be mentioned, and with which they were charged by the board, and also because they consider the infor-

mation embodied in their journal, herewith submitted and in this report, to be more than an equivalent, in its value to the public, for the small sum to which their expenses amount.

In regard to the probable expense of completing the building, including its fitting up and furnishing, its lighting, heating, drainage, &c., the laying out, planting, and permanent fencing of the lot, and all other expenses therewith properly connected, as compared with appropriations heretofore made for these objects, the committee report as follows:

It will be within the recollection of the board that, on the 28th of January last, resolutions were passed by the board making the following appropriations:

The contract for the building not to exceed	-	-	\$231,000
Fitting up and furnishing the same.	do	-	20,000
Warming and lighting the same	do	-	5,000
Permanent fence around the grounds	do	-	10,000
Laying out and planting the grounds	do	-	4,000
Together	-	-	<u>\$270,000</u>

No special appropriation was made for superintendence; but the committee was empowered, by resolution of the 28th January, in accordance with the fifth section of the act organizing the institution, to "employ one or more persons to superintend the erection of the building," and they were required to cause the work to be done "to the entire satisfaction of said superintendent or superintendents." The committee believe that there is no example in this country of the superintendence of a building as extensive as that of this institution costing, including all remuneration to the architect for the original design, and all incidentals appertaining to the architect's office, less than \$3,000 a year. The salary paid to a resident superintending architect of such a building, when it is his own design, is usually, without reckoning incidentals, either \$2,500 or \$3,000 a year. The committee are justified, then, in setting down the entire item of superintendence, (not included in the above appropriations,) with its incidentals, at \$3,000 a year. In consequence of the principal architect residing in New York, it actually costs a trifle more.

Nor was any appropriation made to supply the building with water. This item, under a favorable contract, has cost \$650.

The item of drainage, also, was omitted. In consequence of the municipal regulations of Washington city, it will cost from \$1,000 to \$1,500. The committee has put it down at \$1,350.

If we add to the appropriations specifically made, these necessary items, it will appear that the scale of expenditure to which, by the action of the board, the building committee have been limited for the completion of the building and grounds, all incidentals included, was about \$287,000, thus:

Special appropriations, already enumerated	-	-	\$270,000
Superintendence, including incidentals, say five years,			
\$3,000 a year	-	-	15,000
Drainage, say	-	-	1,350
Supplying water to the building	-	-	650
			<u>\$287,000</u>

The contract, however, for the building, has been taken at a rate much lower than the board seem to have anticipated; at a rate, too, to the credit of the architect it should be stated, fifteen thousand dollars below his estimates. And the contractor has proceeded so far with the erection, that the committee has had a good opportunity to judge of his competency and willingness to complete the whole under the conditions of the contract. Unless prevented by accident not to be foreseen or anticipated, they do not doubt that he will do so. Under these circumstances, although the committee is aware that, in the execution of so extensive a work, many contingencies must be expected necessarily to present themselves, that will add to its cost; yet they confidently believe, that by judicious management and strict economy, the entire expenditure for the erection of the building, including the fitting up and furnishing of the same; supplying the same with water; laying out the lot in grass and planting it with trees and shrubs; fencing the same, both with the present temporary fence and the ultimate permanent one; also all expenses for superintendence of erection, including the cost of architect's office and other incidentals, so as, in fact, to cover all expenses whatever that have been incurred, or are to be incurred, on the building and on the lot on which it stands, until the completion of the building and of the preparation of the lot, up to the 19th of March, 1852, need not exceed two hundred and fifty thousand dollars, being thirty-seven thousand dollars less than the sum total, according to the scale of appropriation, heretofore adopted by the board.

So confident is the committee of the accuracy of the above opinion, that they are willing to see passed by the board stringent resolutions rescinding former appropriations for these objects, and restricting the committee, in their entire operations, to the above amount.

By a resolution of the board of the 5th of February last, the preparation and publication of a work to be entitled "Hints on Public Architecture," and to contain, among its illustrations, views and plans of the institution building, was intrusted to the committee; and an appropriation of a thousand dollars was made for that purpose.

In carrying out that resolution, the committee made with Messrs. Wiley & Putnam, one of the most respectable publishing firms in New York, a contract, of which a copy will be found on their journal; according to the terms of which, the committee agrees to furnish the entire illustrations, which it is stipulated shall not be of less value than one thousand dollars; and the publishers, without further cost to the committee, agree to furnish a thousand copies of the volume bound in cloth, provided the letter-press does not exceed one hundred and fifty pages.

In order to give increased value to the work, the committee applied to several public bodies, having control of edifices of which the architecture is of reputable character, for plates of the same. In the case of one of the New York churches they were successful, and they hope to obtain in the same way plates of one or two other public edifices. The particulars of these applications will be found at large on their journal.

The committee hope to make this treatise, of which a portion of the manuscript is prepared, a work of practical importance, and of national interest. Among the resolutions on the journal of the committee, several will be found relating to this subject, and providing, among other things, that the forthcoming work should include a comparative review of the advantages, economy, and facility of adaptation to modern purposes, of

various styles of public architecture, particularly the Grecian, Roman, modern Italian, Gothic of different ages, and Norman; giving the actual cost, compared to extent of accommodations, of some of the principal public edifices in the United States, in the various styles, including some of the public buildings erected in Washington, and elsewhere, by the general government; also, that, so far as the funds permit, the work shall contain illustrations, in the best style of art, representing such among the public buildings of the United States as exhibit the purest specimens of architecture, in various styles, including two perspective views of the Smithsonian Institution on steel; and including, also, one or more perspective views of the best designs for the institution, offered in competition.

To execute such a plan as this in a reputable manner, the illustrations, including numerous wood cuts, essential to a proper elucidation of the text, will, the committee have ascertained, cost more than the sum heretofore appropriated. The two steel engravings of the institution building in perspective cannot be obtained, executed in the best style of art, for less than \$350 to \$400 for the two. The committee ask, therefore, of the board an additional appropriation of a thousand dollars. By reference to a supplement recently made to the original contract with Wiley & Putnam, and of which a copy is given in the minutes of the forty-first meeting of the committee, the board will perceive that such an additional appropriation, expended on illustrations, will entitle us to an additional hundred pages of letter-press; making in all two hundred and fifty pages. This the committee consider important, as it is doubtful whether the number of pages to which, by the original contract, the volume was restricted, will suffice for the purpose of the work.

It will require six months, properly to execute the illustrations of this work; so that it cannot be published before next summer or autumn. The committee will proceed in its preparation as rapidly as is consistent with the proper execution of the work.

It is the purpose of the committee to add to this work, as an appendix, the result of the experiments heretofore (to wit, by resolution of the first of March last) authorized by the board, to determine the economical value of the different building materials used in the United States. This will give to the work additional value for builders, carpenters, and mechanics, generally.

For further particulars regarding the various subjects touched on in this report, the committee beg to refer the board to the copy, herewith submitted, of their journal. They think it would be useful to make that copy a portion of the annual report of the board to Congress.

They submit also, herewith, the original contracts with Dixon & Cameron, Joel Downer, Caleb Buckingham, and Wiley & Putnam; and the security bond signed by Dixon & Cameron, Winter, and Butler.

All which is respectfully submitted.

ROBERT DALE OWEN.
W. W. SEATON.
JOS. G. TOTTEN.

DECEMBER 7, 1847.

No. 2.

Journal of the Building Committee of the Smithsonian Institution, from the 17th February to the 1st December, 1847.

[Mr. OWEN, Chairman.]

FIRST MEETING—FEBRUARY 17, 1847.

Present, Messrs. Seaton, Hough, and Owen.

On motion of Mr. Hough, it was

Resolved, That Robert Mills, architect, be superintendent, at the rate of one thousand dollars per annum, to commence at this date, and continue at the pleasure of the committee.

Mr. Renwick, architect, being present, was requested to see Mr. Mills and engage his services.

On motion of Mr. Seaton, it was

Resolved, That 100 copies of the specifications prepared by the architect be printed, for the use of contractors.

And, on motion, the committee adjourned.

SECOND MEETING—FEBRUARY 23, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman laid before the committee the following letter from the Hon. Louis McLane:

BALTIMORE, *February 22, 1847.*

DEAR SIR: I understand from our chief engineer that Mr. Howard will recommend to his board of directors, on Wednesday next, to agree to transport the marble on their railroad at $2\frac{1}{2}$ cents per ton per mile; and if that rate be adopted, I should recommend the adoption of a similar charge upon the road of this company. My final answer, therefore, must await the action of the other company.

I am, dear sir, very respectfully, your obedient servant,

LOUIS McLANE.

To the Hon. ROBERT DALE OWEN.

On motion of Mr. Hough, it was

Resolved, That Mr. Renwick be allowed annually the sum of eighteen hundred dollars for superintendence, besides his necessary travelling expenses between New York and Washington, and the necessary incidental expenses of the architect's office; the said salary to commence on the day his plan was adopted by the committee of five.

The chairman laid before the committee a letter from Philip McGaughlin, dated Point of Rocks, Frederick county, Maryland; in which he informs the committee that a quarry of the very best marble, and of great extent, is to be found there, close to the Chesapeake and Ohio canal, and has been examined by himself, and asks the committee to send some suitable person to examine the same.

On motion of Mr. Seaton, it was

Resolved, That Dr. Owen be requested to proceed to visit the said quarry, and also the marble quarries in the vicinity of Baltimore, and to report thereon to this committee; also, that he be requested to aid Mr. Renwick by preparing the drawings for the chemical department.

The chairman stated to the committee, on the part of Dr. Owen, that any services performed by him for the institution would be gratuitous; his actual travelling and other necessary expenses only being paid.

On motion, the committee adjourned.

THIRD MEETING—MARCH 1, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman laid before the board the following letter from Mr. Samuel Worthington, of Maryland, brother of the ex-member of Congress of that name:

BALTIMORE COUNTY, *February 26, 1847.*

To the Building Committee of the Smithsonian Institution:

GENTLEMEN: I will agree to furnish, and have placed on cars at Cockeysville, any quantity of marble for rubble work, from the quarry, undressed other than broken as near the required size as practicable, at \$1 25 per perch; or, if by the ton, at \$1 per ton. Any marble that may be wanted other than the above, I will deliver on cars, as above, at 70 cents per cubic foot for all sizes under forty feet, and for all above forty feet 85 cents per foot.

Respectfully, your obedient servant,

SAM'L WORTHINGTON.

The chairman laid before the committee a reply prepared by him to the above letter, as follows:

WASHINGTON, *March 1, 1847.*

SIR: I yesterday received your letter of the 26th of February, addressed to the building committee of our institution, and shall lay it before the committee, which meets to-day.

Will you have the goodness, in addition to the proposals contained in your letter, to state to us at how much *per perch of twenty-five feet, measured in the building*, you would be willing to rent to us the quarry-right for so much marble as we may require for our building—say about five thousand perches in all.

I think the Maryland marble, including the specimens I have seen from your quarry and from others in the neighborhood, is of very fair quality, and only needs a reputation to bring it into general use. But it is necessary for us to get the quarry right low, or else the New York marble, which is also of excellent quality, will come into competition with it. The owner of the Hastings quarry, on the North river, has offered the quarry-right, for the sake of the reputation it will obtain if selected by our institution. But I think the freight from there may be a trifle higher than that by railroad, if the railroad come down, as I think they will, to 2½ cents per ton per mile.

Whatever material and quarry we may select, the particulars regarding it will be published by us in connexion with the plans of the building, and a copy sent to every literary and scientific society of any importance not only in this country, but throughout Europe. The reputation of the quarry we may select will therefore be known all over the world.

If we contract for the quarry right, we shall have to do so subject to the decision of the two railroads to reduce their freight to $2\frac{1}{2}$ cents per ton per mile.

This will be handed to you by my brother, Dr. Owen, a geologist, who is instructed by our board carefully to examine the various Maryland quarries, including one at the "Point of Rocks," from which specimens have recently been sent to us. You will oblige the committee by affording Dr. Owen every facility to examine your quarry.

If we agree to rent of you the quarry right, we should expect to go into the quarry where you are at work. But this need not at all embarrass your own operations.

If we agree to pay half the expenses of a railroad to connect your quarry with the York road, so that the cars could be loaded in the quarry, will you agree to pay the other half? Please reply to this.

I am, sir, your obedient servant,

ROBERT DALE OWEN,

Chairman of Building Committee.

SAMUEL WORTHINGTON, Esq.

The reply was approved by the committee.

The chairman laid before the committee a letter from Wm. Robinson, owner of a Maryland quarry of "white primitive stone," which he offers for the Smithsonian building.

Referred to Dr. Owen.

The chairman laid before the board a letter from Peter Gorman, stating that he had found a quarry superior to any other he had visited, (Samuel Worthington's,) and which could be rented on cheap terms.

The chairman informed the committee that he had seen Mr. Gorman since the receipt of this letter, and he (Mr. G.) stated that Mr. Worthington was willing to rent his quarry for the purposes of the institution at *twenty cents per perch* quarry right.

Letter laid on the table.

The chairman laid before the committee the following letter from Mr. Howard, president of the Baltimore and Susquehanna railroad:

OFFICE OF THE BALTIMORE AND SUSQUEHANNA RAILROAD Co.,

Baltimore, February 24, 1847.

DEAR SIR: In compliance with your request, I submitted to-day the proposition that we should unite with the Baltimore and Ohio Railroad Company in transporting rough marble for the Smithsonian Institution, from the quarries in Baltimore county to Washington, at a charge of $2\frac{1}{2}$ cents per ton per mile for the whole distance.

I regret that I cannot yet give you an answer. The period has now arrived for the appointment, by our legislature, of directors of the company on the part of the State, who will constitute a majority of the whole board.

Expecting every day to hear of such appointment being made, the directors have not deemed it expedient to enter at this moment into a con-

tract which will last for several years, and thereby forestall the action of their successors, should the legislature think proper to make any changes in the board.

This question will probably be settled before this day week, when I hope to be prepared to give you the decision of the company.

Hoping that this unavoidable delay may not be productive of any inconvenience to the Regents of the institution, or to the committee of that body with which you are acting,

I am, very respectfully, your obedient servant,
CHARLES HOWARD, *President.*

Hon. ROBERT DALE OWEN,
Chairman of Building Committee.

The letter was laid on the table.

On motion of Mr. Seaton, it was

Resolved, That, as the specifications were not furnished by the printers by the time appointed by public advertisement, for the inspection of bidders, the time for receiving bids for the work specified in the advertisement of the building committee be extended from the 10th to the 15th inst.

On motion, the committee adjourned.

FOURTH MEETING—MARCH 6, 1847.

Present, Messrs. Seaton, Hough, and Owen.

Mr. Seaton laid before the committee a letter from Mr. Peter, owner of a quarry on the margin of the canal, near the mouth of Seneca creek, as follows:

MONTE VIDEO, (*near Darnestown, Montgomery Co., Maryland*), December 9, 1847.

DEAR SIR: Yours of the 5th inst. was received by yesterday's mail, in which you state that the Regents of the Smithsonian Institution have in their possession a specimen of red sandstone taken from my quarry, on the margin of the canal. I am unable to determine from which particular quarry the specimen they have in their possession was taken, as several have been opened, and there is a continuous line of a mile in length of similar stone, equally convenient to the canal.

The aqueduct at the mouth of Seneca creek, and many of the locks, both above and below, are constructed of stone derived from my land.

The jury, in condemning the quarries for the use of the canal company, allowed me twenty five cents a perch for the backings; that is, all stone intended for cut work, twenty-five cents—all calculated for hammered work, twelve and a half cents a perch; and for these prices would I grant permission to obtain stone for any purpose.

The excellence of the material—for it is capable of withstanding any exposure—the facility with which it is obtained, and the ease with which it may be transported by the canal to the spot where required, would, I should suppose, give it a decided preference over any stone which could be brought in competition with it, for the purposes of the institution.

As to quantity, it is unbounded, and in texture and shade a great variety; and in such a building as, I have no doubt, the Smithsonian Institution will be, would present not only an appropriate, but a pleasing contrast with the other public edifices in Washington.

It would afford me great pleasure to see it selected by the Regents as the material of which the edifice shall be constructed; and the very liberal price at which it is offered, may, I hope, have its influence in securing its adoption.

It will afford me pleasure to answer any inquiry the Regents may desire to make in relation to the stone, and to afford every facility to an agent, should they think proper to send one, in making any examination.

Yours, very respectfully,
JOHN P. C. PETER.

W. W. SEATON, Esq.

On motion of Mr. Seaton, it was

Resolved, That on the return of Dr. Owen from the marble quarries of Maryland, he be requested to visit the different sandstone quarries in the vicinity of Seneca creek, and make a report on their extent, and their general character and fitness for furnishing a suitable material for the Smithsonian building.

Mr. Owen submitted the following letter:

BALTIMORE COUNTY, *March 6, 1847.*

SIR: Yours of the 1st inst. has been duly received, and, in reply, I would state that I am almost entirely uninformed as to the sizes of the stone required, and am at a loss how to propose for the material.

If you would do me the favor to send me, immediately, a specification of the stone wanted, I will then propose for the stone, whether the rubble stone is to be worked and made ready for the mason, or in the rough state from the quarry.

You may have misapprehended my former letter: that was for the rough and the ordinary size building-stone. As to the quarry right, the price would depend much on which quarry you might want the right to quarry into; I have several. I should be much pleased to furnish you with what stone you may want, should you determine to use our stone, and think the material to be as good as any in our neighborhood.

Please write immediately on the reception of this, in order that I may have time to propose by the 20th inst. I was this day with some of the directors of the Susquehanna road, and I think they will agree to take the proposed amount—that is to say, $2\frac{1}{2}$ cents per mile.

Respectfully, your obedient servant,
SAMUEL WORTHINGTON.

Hon. R. D. OWEN,
Chairman of Building Committee.

On motion of Mr. Seaton, it was

Resolved, That the reply to the above be postponed until the return of Dr. Owen from Maryland.

The chairman laid before the committee the following report from Dr. Page, appointed to make examination of building-materials:

To the Building Committee of the Smithsonian Institution, on the action of frost upon certain materials for building.

Of the twenty-five specimens of stone submitted to me for examination with reference to their relative properties in resisting the disintegrating action of frost, I have been able to investigate but twenty-two; the remaining specimens, marked, respectively, 1, 9, 5 D, being too small to submit to the test. It was thought desirable to ascertain their specific gravities, with a view to determine if any connexion existed between their densities and liability to dilapidation. The result leads us to infer that such relation does not exist, and that the texture of the stone, without reference to density, determines its fragility under the influence of frost. Resort was had in these experiments to an *imitation* of the operation of freezing water after the process described by Brard, a French chemist, in the "*Annales de Chimie et Physique*," vol. 38. The details of the process will presently be given.

The absorption and subsequent freezing of water within the stone would have been a more energetic mode of action; but the undertaking would prove one of considerable practical difficulty, and, on the whole, not so reliable as an experiment unless, perhaps, the circumstances were such as to admit of their exposure to *natural* freezing under favorable circumstances.

The process of Brard consists in substituting the crystallization of the sulphate of soda for the freezing of water, and has met with the approval of many French architects and engineers, as the results accord with their experience. In the freezing or crystallization of water, the expansion is such that the crystals float; while in the crystallization of sulphate of soda, and other soluble salts, the crystals sink in the solution; but, notwithstanding, the exertion of the crystalline forces of these salts is sufficient to produce decided impressions upon the hardest of building materials in a few weeks.

The specimens of stone furnished me by your board were all numbered as according to the subjoined table; and it may be proper to remark, that their localities and respective values, as usually estimated, were unknown to me until after the results of the experiments had been laid before you and approved.

Six numbered specimens were also handed to me by Mr. Dewey, and are marked, respectively, 1 D, 2 D, &c. The specimens were cut into inch cubes; three of the whole number being of insufficient size, were laid aside, as above mentioned. The cubical blocks, suspended by strings, to which the respective numbers upon labels were attached, were first immersed in a boiling solution of sulphate of soda, saturated when cold; and after remaining half an hour in the boiling liquid, they were removed and hung upon a frame over half-pint bowls, containing also a quantity of the cold saturated solution.

In the course of 24 hours a considerable efflorescence was found upon the surface of each specimen, consisting of the crystals of the salt mixed with comminuted portions of the stone. These were washed off daily, by simultaneously immersing the stones in the solution in the bowls, and suffering them to remain there for a few minutes. This proceeding was repeated daily for one week, when it became necessary to deviate from Brard's directions, and to keep them in a moderate temperature, instead of a cold cellar, as he advises. It was obvious that the investigation would be ex-

ceedingly protracted unless the crystallization of the salt were promoted by moderate warmth, as by this time the detritus from some specimens was hardly visible.

After the change, the process went on with greater rapidity; and at the end of four weeks the dipping was stopped, and the sediment or deposit in each bowl was carefully weighed, and furnished the results as given in the table. In some cases the comminution of the stone was exceedingly fine; and in the washing and decanting process, ample time was allowed for the deposit to settle after each washing, and the utmost care used in the subsequent operations of decanting, drying, and weighing. The time of one week for the operation of dipping the stones in the solution was not deemed sufficient, as the deposit from the marbles and some other varieties was hardly apparent; and it was therefore continued, as above stated, four weeks, and thus the slight errors of manipulation, if any occurred, are proportionally diminished.

Disintegrating effects of frost upon stones used for building materials.

Specimens marked,		Specific gravity.	Loss by frost, in grains.
No. 1	Not tested; the specimen being too small.		
No. 2	Symington's close-grained marble (similar to Worthington's) - - -	2.834	0.19
No. 3	Connecticut sandstone, coarsest-grained quality - - -	not ascertained.	14.36
No. 4	Dark red Seneca sandstone (similar to Peter's)	2.672	0.75
No. 5	Symington's large crystal marble - -	2.857	0.50
No. 6	Symington's blue limestone - -	2.613	0.34
No. 7	Coarse, large crystal marble, Mt. Pleasant, New York - - -	2.860	0.91
No. 8	Port Deposit granite - - -	2.609	5.05
No. 9	Too small to examine.		
No. 10	Trinity sandstone, fine grained and light-colored - - -	not ascertained.	1.58
No. 11	Connecticut sandstone, finer-grained quality	2.583	21.93
No. 12	Nova Scotia sandstone, coarse grained -	2.518	2.16
No. 13	Light Seneca sandstone, dove-colored -	2.486	1.78
No. 14	Pennsylvania marble, close-grained -	2.727	0.35
No. 15	Pennsylvania blue limestone - -	2.699	0.28
4 T C	Trinity church light colored, close-grained sandstone, New Jersey - - -	2.482	0.62
P O	Patent Office light sandstone - - -	2.230	18.60
S B	Soft brick - - -	2.211	16.46
H B	Hard brick - - -	2.294	1.07
1 D	Granite from Potomac Great falls - -	} Not ascertained.	0.35
2 D	Dark coarse sandstone, of Seneca aqueduct, Peter's quarry - - -		5.60
3 D	Sandstone four miles above No. 2 D, Peter's, next west of Beaver dam quarry -		1.58

TABLE—Continued.

Specimens marked,		Specific gravity.	Loss by frost, in grains.
4 D	Dark sandstone, from quarry near Wood's residence -	} Not ascertained.	3.94
5 D	Not tested, specimen being too small.		
6 D	Lower stratum, Beaver dam quarry -		1.72

Respectfully submitted by

CHARLES G. PAGE.

WASHINGTON, D. C., *March 5, 1847.*

- Laid on the table.

On motion of Mr. Seaton, it was

Resolved. That Mr. Hough be a sub-committee to revise the details of the specifications, with a special reference to the solidity, security, and economy of the building, and to report thereon to this committee; specifying what changes, if any, he may deem necessary or expedient.

On motion of Mr. Seaton, the following resolution was adopted:

Whereas the Board of Regents did, on the 5th day of February, pass the following resolution, to wit:

“*Resolved.* That the building committee, in conjunction with the Secretary, be authorized to publish, in such form as they may deem most appropriate, one thousand copies of a brief treatise, to be entitled “Hints on Public Architecture,” and to be illustrated with designs of the plan of the building adopted for the Smithsonian Institution, and, at the option of the committee, with any other designs that are the property of the institution: *Provided,* that the cost of the same shall not exceed one thousand dollars, which sum is hereby appropriated for that purpose:” Therefore,

Resolved. That Mr. Owen be a sub-committee to prepare, after consultation with the Secretary, the said treatise, and to contract for the necessary illustrations: provided he submit the same to this committee before publication.

The chairman submitted a table of the value of different kinds of plank and scantling—Mount Crawford, Rockingham county, Virginia.

Referred to the architect.

On motion, the committee adjourned.

FIFTH MEETING—MARCH 12, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman laid before the committee the following letter from the chief engineer of the Baltimore and Ohio Railroad Company:

ENGINEER'S OFFICE, BALTIMORE AND OHIO RAILROAD,
Baltimore, March 1, 1847.

SIR: I have been requested by Mr. McLane, the president of this company, to communicate to you that the Baltimore and Susquehanna Railroad Company has not yet decided to join this company in the transportation of marble, in the rubble form, to Washington, for the buildings of the Smithsonian Institution, at the rate ($2\frac{1}{2}$ cents per ton per mile) suggested by you. The president of the Susquehanna Company informed me to-day that he would apprise you by letter of the reasons of the delay on the part of his company.

I have only now, by Mr. McLane's desire, to repeat that the Baltimore and Ohio Company is ready, upon reasonable notice, to enter into the transportation, whenever the Susquehanna Company is prepared to unite with it in the operation, at the rate which has been mentioned.

I am, sir, very respectfully, your obedient servant,

BENJAMIN H. LATROBE,
Chief Engineer.

HON. ROBERT DALE OWEN.

Laid on the table.

The chairman laid before the committee the following letter from the president of the Baltimore and Susquehanna Railroad Company, relative to rates of freight:

OFFICE BALTIMORE AND SUSQUEHANNA RAILROAD CO.,
Baltimore, March 8, 1847.

DEAR SIR: I am now authorized to say that the president and directors of this company will unite with those of the Baltimore and Ohio Railroad Company in an agreement to transport the limestone or rough marble for the building of the Smithsonian Institution, from the quarries on the line of the railroad of this company to Washington, a distance of 53 miles, for $2\frac{1}{2}$ cents per ton of 2,000 lbs. per mile. The company will agree to carry 75 tons per week whenever required.

From the communications I have had with the officers of the Baltimore and Ohio Company, I feel well assured that no difficulty will be experienced in making such an arrangement with the two companies as will be entirely satisfactory to the building committee of the Regents, and to the person with whom they may contract.

Very respectfully, your obedient servant,

CHARLES HOWARD, *President.*

HON. ROBERT DALE OWEN,
Chairman of the Building Committee.

Laid on the table.

The chairman laid before the committee the following letter, containing proposals to furnish marble from the State of New York:

NEW YORK, *March 6, 1847.*

GENTLEMEN: I will furnish white marble from my quarry at Hastings, on the Hudson river, for the Smithsonian Institution, as follows:

110,000 feet of rubble facing, 1 foot thick, at 30 cents per foot,
 measured in the wall - - - - - 30 cents.
 20,000 cubic feet dimension do. do., for cutting, at 98 cents
 per cubic foot - - - - - 98 "
 Delivered in the city of Washington.

Very respectfully,

JOHN B. GLOVER.

A. R. Raymond, bondsman.

Hon. ROBERT DALE OWEN,
 WILLIAM J. HOUGH,
 W. W. SEATON,
Building Committee.

Laid on the table.

The chairman laid before the committee the following letter, making proposals to furnish marble from Massachusetts:

WEST STOCKBRIDGE.

DEAR SIR: I understand from Mr. Hooker, of New York, that your plan has been adopted for the Smithsonian Institution, and that you are receiving proposals for marble for buttresses, blocks, caps, coping, and ornamental bands. I submit the following proposition for your consideration:

I propose to furnish you blocks of marble, for all sizes under 4,000 lbs. weight, for eighty cents per cubic foot, trimmed near the size, and delivered at Washington.

I have not the plan before me. Mr. Hooker states that there will be from twenty-five to thirty thousand feet of said stone; if that is the quantity, I will pledge myself to furnish it in two years from the date of contract, or comply with your terms in regard to time.

Yours, &c.,

MILO M. PARRISH.

Surety—Thomas Milligan, Wm. Milligan, Gilbert Milligan.

Mr. RENWICK, *Architect.*

N. B.—Furthermore, I think that it would be advisable to try Stockbridge marble; it can be worked for some six cents cheaper than any other marble in this country.

Mr. Thomas Milligan was one of the firm of Leonard and Milligan, who had a contract on the water-works at Dob's ferry.

Laid on the table.

The chairman laid before the committee the following letter, making proposals to furnish lumber, from Philadelphia:

PHILADELPHIA, *March 9, 1847.*

GENTLEMEN: I do hereby propose to deliver all the lumber required in the erection of the Smithsonian Institution, including hemlock, white pine, yellow pine, (including the flooring,) for the sum of twenty-six

dollars per thousand feet, and will give security for the faithful performance of the contract.

I consider my bid as worthy the notice of the committee, and would be glad to confer with them on the subject, should they deem it advisable.

I have on hand a large supply of seasoned lumber, and arrangements for the supply of any quantity wanted.

I would respectfully refer the committee to the Hon. James Buchanan, Secretary of State, should they desire information as regards my ability to perform any engagements I may enter into. Please address me at this place if you wish me to go on to the city of Washington.

Very respectfully, your obedient servant,

SAML. M. LEIPER.

To the BUILDING COMMITTEE
of the *Smithsonian Institution*.

Laid on the table.

The chairman submitted, from Dr. David Dale Owen, the following

Report on the Baltimore county quarries.

To the Building Committee of the Smithsonian Institution:

GENTLEMEN: In conformity with your instructions, I have examined a number of quarries in the vicinity of Baltimore, and also one at the Point of Rocks, with a view to ascertain the extent and quality of the building material they furnish, and report as follows:

Extensive quarries of white crystalline marble commence about twelve and a half to thirteen miles from Baltimore, near a small village called Texas, or Clarksville, on the line of the Susquehanna railroad.

The first quarry visited is that owned by Fell and Robinson, who are largely engaged in lime-burning. It lies on the west side of, and only a few paces from, the main track of the railroad. The surface layers are, by barometrical measurement, forty feet above the level of Cold Spring creek, a small stream running through this quarry; and ledges of marble extend down to the banks of that stream and form its bed; varying, however, at different heights, somewhat in texture and appearance.

The purest variety in this quarry is of a coarse and highly crystalline structure, varying in tint from a pure white to a faint shade of bluish or grayish white, as may be seen by inspection of the various specimens. It is known to the quarrymen under the name of "*alum limestone*."

The course of this purer variety is northwest and southeast, with an average width of 150 feet, and extending 525 feet back to Fell and Robinson's west boundary line. Taking the average depth of this quarry at 18 feet, its solid contents may, therefore, be estimated at $18 \times 150 \times 525 = 1,417,500$ cubic feet, or 56,700 perches, in this single quarry.

North of this white crystalline marble, the rock gradually assumes a shade of blue or gray, as may be observed by inspecting specimen No. 4.

The upper layers at Fell and Robinson's quarry are banded with light gray veins. Below this are at least three feet of pure, highly crystalline, white limestone. Judging from specimens detached from the interior projecting layers, there is evidently a great body of the same kind of rock beneath, with probably some banded beds, similar to the upper beds previously described.

On the east side of the railroad and close to it, some four hundred or five hundred yards from Robinson and Fell's quarry, Griscom and Borrough have opened quarries. The rock here is of the same character as that in Robinson and Fell's quarry, and equally good; see specimens Nos. 2 and 2*a*. Some nests in this quarry are of a closer grain than the main beds; see specimen No. 2*ab*.

The ledges of this rock, wherever it projects through the soil, and has been exposed probably for ages, have a dark appearance on the surface, apparently from incrustations of lichen; but when broken, the discoloration is seen to be superficial, not extending at all into the substance of the rock: see No. 5*b*.

The dip of the beds seems to be generally to the southwest, at an angle of perhaps 20° to 25° .

There is no difficulty in draining these quarries, since there is twenty to forty feet of rock entirely above the level of water drainage.

The top layers are sometimes in detached and more or less rounded masses; owing, no doubt, to the corrosive influence of water containing carbonic acid, or some organic acid, percolating through the superficial soil, corroding and dissolving the accessible edges of the calcareous layers.

Over the upper beds lies usually ferruginous earth of deep red color, forming a remarkable contrast to the snow-white marble beneath; indeed, this appearance on the surface might, perhaps, often serve as a guide to the detection of the white marbles of this region.

Symington's quarry lies in the same vicinity, about three hundred to four hundred yards from the main track. The owner of this, as well as the other quarries here, intend to have *switches* (that is, lateral branch railroads) running into their quarries.

The rock here is of a rather finer crystalline structure than that of the preceding, with a slight cast of blue; see specimens Nos. 3 and 3*a*. A solid bed is exposed, of nearly uniform texture, about nine feet thick. Blocks weighing several tons are now lying in the quarry. At the top of the quarry there are some beds with gray mica disseminated: such must, of course, be rejected. The dip is here as at the other quarries.

Thirteen and a half miles from Baltimore and half a mile east of the railroad, and about one mile northeast of the previously described localities, is a quarry on land owned by Chisilla Owens. The rock here is also a white and highly crystalline marble, of a good color, similar to that in the vicinity of Texas; but the quarry is not yet opened: the surface indications are, however, very favorable for a body of good "alum limestone." For sample of this material, see specimen No. 6.

In the vicinity of the same railroad, a little further to the north in the neighborhood of Cockeysville, fourteen to fifteen miles from Baltimore, are several other marble quarries.

The first visited was on land owned by Mrs. Taylor, and situated about a quarter of a mile west of the railroad. The rock exposed here differs from that of the Texas quarries, in being rather closer-grained and the surface layers more granular; see specimen No. 5. At this locality a block was got out upwards of seventeen feet long, which was presented to the building committee of the Washington monument at Baltimore; out of this block the statue on the summit was sculptured.

Loose blocks of similar character to that in the quarry are seen all over the surface of the adjacent hills.

The lower beds are not exposed in Mrs. Taylor's quarry.

Four hundred to five hundred yards nearer the railroad, a better cemented and rather more compact marble crops out to the surface; but no quarry is opened here, to enable one to form a correct judgment as to the extent, thickness, or uniformity of the beds. Still, from the persistency of the same material throughout this region, one may predict, with tolerable certainty, that there is here, deeper seated, a great mass of valuable material.

Part of the marble employed in the construction of the Washington monument at Baltimore was obtained at this quarry of Mrs. Taylor's, and part of it from Scott's quarries, five miles further to the north. The latter is said to be of an inferior quality. Of this I had no opportunity of judging personally, as I did not visit the quarry, thinking it was too far out of the way.

Three quarters of a mile from the railroad, and a mile and a half or two miles northeast from Texas, is another quarry, on Mrs. Taylor's property. This quarry has been wrought for fifteen years, and supplied Baltimore with a great deal of marble. The upper layers, (see specimen No. 5*b*,) at this place, are, from some peculiarity, either of texture or chemical composition, much disposed to crumble to calcareous sand, which has been employed to advantage as a mineral manure on land. The inferior beds are of a sounder material, and lie more regularly than usual, but the rock is not of as pure a color, being banded with gray stripes; see specimen 5*c*. Dip very slight to the south.

One hundred yards south of this is another quarry, on Chisilla Owens's property. This rock is of a beautiful texture and good color, as may be seen by specimens No. 5*d* and No. 7. It lies in tolerably distinct strata, and nearly horizontal, but it is traversed by minute cross-fissures, which detract much from the value of the material, inasmuch as large solid blocks cannot be got out, at least from the exposed layers; a sounder material may perhaps be obtained lower down.

A little northwest of this is Baker and Conly's quarry, near Beaver Dam creek. This quarry is well opened, presenting a perpendicular face of fifteen feet or upwards; four and a half to five feet in this quarry, as far as opened, is tolerably good marble, (see specimen No. 8;) but the upper beds are of inferior quality, being contaminated by a thin interlamination of mica in the interstices of the stratification.

Nests of sulphuret of iron also occur here, which would render necessary a very careful selection. There are at present in this quarry several blocks that would fill a room of ordinary size.

Between this quarry and Chisilla Owens's quarry, on Beaver Dam creek, and about two hundred to three hundred yards from the last described, Mr. Baker has quarried out a considerable quantity of white marble of very superior quality. Unfortunately, the ledges of rock here are but little above the level of Beaver dam; it is said, however, that when this quarry was worked, it was easily kept drained by a one-horse pump. The fact of good marble occurring at this low level on Beaver dam, renders it more than probable that good marble will be found in the adjacent quarries just mentioned at a considerable lower level than where they are now worked.

On the northwest branch of Beaver dam, between fifteen and sixteen miles from Baltimore, and rather more than a mile from the railroad, are Mr. Worthington's marble quarries, and saw-mill for cutting it into dimension-stone.

The rock in this vicinity is mostly composed of small aggregated crystals, of less size and finer texture than the "alum marble."

The old quarry was first visited. It is situated on a hillside, fifteen feet, by the barometer, above the drainage level of the northwest branch of Beaver dam. The top rock here is not pure, nor even bedded; but beneath, at the above level, commences a marble of snowy whiteness, passing into one with a blue tinge; see specimens 10*x* and 10*bl*. This marble spalls with ease and precision, nearly as well on the edge as the bed, and is free to work in every way. This is also the case with the marble taken from Baker's lower quarry; and indeed all the finer marbles have the same property, unless they are laminated and schistose. The marble here admits of being split out of considerable length, twenty or even forty feet. The face, however, when thus split, is more or less irregular, varying four to six inches or more from a true level surface.

On the other hand, the facility of spauling enables it to be brought to the desired dimensions with comparatively little labor. The blue-tinged variety quarried here is but little inferior in appearance to the virgin white. Both varieties, though they do not admit of receiving a high polish, like the best quality of Carara marble, can nevertheless be wrought into very fine ornamental work, with a beautifully sharp arris, as may be seen by the specimen with raised lettering, and that cut into a capital carved by Mr. Parkie, of Baltimore.

The lower beds are not exposed on the quarry face, but outcropping ledges can be seen in various places around the slopes of the rising ground; also in the bed of the creek, and everywhere in the bottom, where ditches have been dug two to three feet deep; all indicating that a region of country of three quarters of a mile square is underlayed by rock of similar character.

Mr. Worthington has opened a new quarry on a hill about half a mile southwest, and by barometrical measurement 40.8 feet above the level of the northwest branch of Beaver Dam creek, at the stone saw-mill. This quarry is about three-quarters of a mile on the east side of the railroad. The upper masses are alone at present exposed.

They are rather more disposed to crumble than the best quality of the old quarry rock, but it is far superior to the upper beds at that locality, and there is every reason to believe that the best quality of rock is not yet reached; indeed, probe-holes have been already sunk three feet into the floor of the present quarry, which show that there are solid ledges of white marble of the same texture beneath.

The hill on which the new quarry is situated is estimated, at the lowest calculation, two hundred yards square; and it may be excavated for twenty-five feet in depth without being incommoded with water.

Within the last five years, at least twenty-five thousand cubic feet of dimension-stone have been taken out of these two quarries.

An experienced stonecutter of Baltimore, who has worked a great deal of fine-grained marble, thinks there may be some difficulty in procuring dimension-stone of that quality of greater thickness than twenty inches. The same individual is of opinion that Baker's lower quarry might furnish a material of uniform color, of greater thickness. He has worked both the fine and the coarse crystallized marbles of Baltimore county; and his experience is, that the fine-grained marble dulls the tool more than the "alum stone," and is more difficult to saw, because, as he

expressed it, the fine-grained rock contains most flint. He is, moreover, of opinion that the fine-grained is rather more apt to stain. There is a difference of opinion, however, on these matters. An accurate chemical analysis would throw light on this subject. There is also a difference of opinion as to the presence and proportion of magnesia in the different samples of these rocks. Some contend that the coarse crystalline marbles contain most magnesia, and that none of these Baltimore marbles have less than five per cent. of that alkaline earth. These are points which can be alone settled by minute chemical researches. Such analysis would also throw much light on their comparative durability; since, in the opinion of recent writers on this subject, the greater the proportion of *accidental* magnesia, the more liable the rock is to disintegrate until it reaches a quantity equivalent in proportion to the lime, and then unites with it to form a true dolomite or magnesian limestone; a very durable building-material, and the same which was selected, after careful research, for the exterior of the new Houses of Parliament in England.

As already remarked, iron pyrites (bi-sulphuret of iron) occurs occasionally in these marbles, in nests, both at Worthington's and Baker's quarries; see specimen 10*p*. This mineral is much prone to undergo chemical changes by the action of the oxygen of the atmosphere: the sulphur passes into the state of sulphuric acid, the iron into oxide of iron, forming copperas or bi-sulphate of iron, a salt easily soluble in water, which is gradually removed; leaving, of course, a cavity in which water may lodge and freeze, whilst at the same time the oxidation of the iron spreads a disagreeable ferruginous yellow stain around the spot. For this reason great care should be taken, in selecting marble, to reject all masses contaminated with this mineral.

The only locality in the neighborhood of Worthington's quarries where a marble of the structure of the "alum stone" was observed, is in the immediate vicinity of his dwelling-house; here, for a short distance, a white marble of that texture occupies the surface. Three hundred to four hundred yards beyond, on Prospect Hill, at a height of two hundred and twenty-one feet above the bed of the northwest branch of Beaver Dam creek, a highly ferruginous mica slate, charged with garnets, reaches the surface: this seems to be the boundary of that formation on the east. This garnetiferous micaceous schist may possibly serve to define the limits of the white marble formations, and may, perhaps, be the means of detecting these metamorphic marbles elsewhere.

One mile north of Texas, close to the railroad, is a quarry owned by Chisilla Owens, and now worked by Mr. Cooper. The rock here is well bedded, and may be quarried with ease; but the beds are, for the most part, thin, and there is an interlamination of mica. Here the dip is to the northeast, in an opposite direction from what it is in the Texas quarries. There is a bed of white crystalline marble ("alum stone") in this quarry, of about two to two and a half feet thick; whether it extends of uniform appearance and thickness through the hill, is not clearly seen in the present state of the quarries. The blocks lying in the quarry are of very regular dimensions, and the surface comparatively even, but they are not large, and many of the beds are interlaminated with mica; see specimen No. 11.

In the vicinity of Texas is a quarry owned by Judge Nesbitt, which has afforded some good white marble of a rather finer grain than that of most of

the quarries in this vicinity; see specimen No. 12. I had not an opportunity of examining this quarry in person.

South of Fell and Robinson's quarry at Texas, on land owned by Mr. Cockey, there is some fine, white, close-grained crystalline marble. It lies, however, low—not more than eight or ten feet above the bed of Cold Stream creek. The quarry is not open, so that one cannot judge of the bed. Mr. Cockey says the same kind of rock has been found half a mile west. This is the only proof of its being extensive.

On the whole, it appears that there is a region of country extending for about two miles from north to south, and three-quarters to a mile from east to west, occupied by this marble, extending from the level of the water-courses to forty to forty-five feet above the same, and constituting the whole of the hills within this tract of country; not all of the purest white, but varying from a snow-white to a light blue. It may be estimated that about one-third is of tolerable purity, and either of the crystalline texture or of the fine grained crystalline structure, approaching in quality to the Carara.

Nor can this be considered the limit of the formation. Scott's quarry, five miles beyond these, in the vicinity of the railroad, supplied a portion of the material for the Washington monument at Baltimore, and other quarries of white marble were pointed out to me from Prospect Hill, several miles off.

It cannot be doubted that these quarries are capable of supplying an unlimited amount of fine building-material, either of the fine grained marble or of the "alum stone." Whether the former could be obtained for the entire Smithsonian building, of a uniform color, free from gray spots and veins, is less certain; though Worthington confidently asserts, if he be permitted to supply white and faint-blue indiscriminately, similar to specimens Nos. 10 *w* and 10 *bl*, he can furnish far more than the building requires, without blemish.

From all I have seen and heard, I incline to believe that the fine-grained marble will be somewhat more expensive to cut than the "alum stone;" but, on the other hand, if the ornaments have bold projections, and much undercutting, the coarser "alum stone" is unsuitable; it chips off more readily, and is less tough than the finer-grained varieties.

The "alum stone," as far as I can learn, works much like the Westchester marble; and if in the latter all the necessary Norman ornaments can be cut, so can they also, most probably, in the former.

After the inspection of the Baltimore marble quarries, I proceeded, according to instructions, to the Point of Rocks, to examine Mr. McGlauchren's quarries.

I found them situated on Hook's run, two and a half to three miles west of the Point of Rocks, or about seventy-three miles from Baltimore, embraced in highly disturbed, contorted, and deranged chloritic and talcose schists, and distant only about three miles from the brecciated Potomac marble formation.

Nothing but hand specimens, and a few surface rock for making lime, have been as yet procured here, so that there is but little opportunity of judging the extent of the formation. The surface indications are not favorable, neither as regards uniformity of texture and composition, nor yet extent of beds.

The chloritic schists dip here at a high angle to the south. The out-

crop of the white calcareous rock in question lies at the base of a hill on Hook's run, about twenty to twenty-five feet high, and pitches at an angle of some forty five degrees into the base of the hill, which is here on a level with the bed of Hook's run, at the same time inclining to the west, so that it is inaccessible except at great expense of labor.

There is a somewhat better exposure of the Hook's run marble at a little higher level, on a hill a few hundred yards to the south; and here the best specimens were procured; see No. 15. Part of the ledge is composed of white calcareous layers, which are said to be susceptible of a polish. The rock at both places has a ragged, irregular, and uneven fracture, and is so interspersed with white and green tale, that it cannot be considered of much value as a building-material. It is possible that beneath this a purer and better rock might be reached; but the surface indications do not even favor that conclusion. Unless the bed should be brought to the surface by an upward turn of the contorted strata on the south side of this range of hills, there is no possibility of getting at it. Mr. McGlauchren intends to try, if possible, to open a quarry, with a view to ascertain more satisfactorily the extent and quality of this material.

On the whole, in its present situation, this marble seems worthless for the present purpose.

During the examination of structures and monuments of Baltimore marble, both in Green Mount cemetery and in the city of Baltimore, with a view to ascertain the durability and facility of working this material, I was so much struck with the beauty of some of the granite vaults and fronts of buildings that I determined to visit the quarries from whence this material was procured, more especially as the owner, Mr. Green, informed me that he was confident he could furnish it at a cheaper rate than the white marble could possibly be supplied, and as it was only two miles out of my way in returning from the Point of Rocks.

Accordingly, I stopped at Woodstock, 16 miles beyond the Relay House, and inspected carefully the Waterville branch and the Fox rock quarries in this vicinity; both of which are well opened, and afford a good opportunity of judging the quality and extent of this formation.

For about a mile square at this locality is an outburst of quartzose granite of magnificent quality, both as regards beauty of appearance, compactness of structure, and uniformity of color, texture, and composition. I have never seen anything superior in this country; indeed, I doubt whether it can be excelled in any country. The proportion of felspar and mica is very small. The former is only in minute specks, the latter in small black scales, whilst the great bulk of the rock is a vitreous quartz.

In consequence of the mica being only in small regular disseminated flakes, it imparts to the rock an agreeable light gray, well adapted, in my judgment, to the Norman style of architecture.

In consequence of the composition and texture of this granite, it must possess a durability not to be surpassed by any building-material. For the same reason, it must be difficult and expensive to cut; but in consequence of the precision with which it splits, not only in the lines of cleavage, but even across the grain, it may possibly be furnished in competition with marble.

To give some idea of the remarkable facility with which the granite in question cleaves, I may state the following facts, which came under my observation: A slab twenty feet long and one foot square was split longitudinally into two, nearly as accurately as if it had been sawed.

Again, I observed two slabs—one measuring thirteen feet long, four feet six inches broad, and two feet thick; the other eleven feet long, six feet broad, and two feet thick—which were split in two, so as to form slabs of the same dimensions in length and breadth, but only one foot thick; and so perfect were the faces of cleavage, that they did not deviate one inch from a true level surface.

So confident are the quarrymen of the certainty of splitting this granite in any required direction, when even of no greater thickness than nine inches or a foot, that they will, for the sake of having weight and substance in the block to retain it in its position while under the hammer and chisel, first dress the two outside faces, and trust to splitting the slab or block in two.

Fully to appreciate the quality of this granite, the quarries themselves must be visited, and the huge blocks in mass inspected as they are removed from their original bed. There, one may see a perpendicular face of nineteen feet presented to view, extending twenty, thirty, and even forty or fifty feet, without a seam or flaw, or the slightest variation in hue. A mass of forty or fifty tons weight may often be seen severed from the parent rock, by the simple but efficient means of small iron wedges.

On some slabs, by close inspection with the magnifying glass, a few minute specks of iron pyrites may be seen; but none were observed visible to the naked eye.

Mr. Green thinks nearly one-third of the freight may be saved by bringing the rock to its proper dimensions at the quarry.

This granite does not spaul freely; but, in consequence of the facility with which it splits, but little spauling is required.

From the bottom of the Waterville branch quarry to the summit of the outburst is forty feet, by barometrical measurement.

The Fox rock quarry is thirty-six feet from top to bottom, where now excavated. It might be worked some fifteen or twenty feet lower before being incommoded by water. Mortar adheres with such force to this granite, that, when fairly set, it requires as much force to separate the substance of the granite as to detach the mortar from the face.

On the whole, the inspection of these granite quarries has impressed me with the belief that no locality can furnish a superior quality of granite, and that it cannot be surpassed for strength and durability by any building-material in the world.

The stonecutters' bill in granite will, I fear, run up very high, on account of its great hardness; but, if the expense be not an objection, I do not think that there will be any practical difficulty in rendering in granite ornamental work so little elaborate as that of the Norman style.

An objection to the use of granite for the Smithsonian building deserves serious consideration. It is, that in this material the effect of light and shade is in a great measure lost; while every projecting ornament in the marble is marked by a distinct shadow. How far this may injure the general effect under the plan adopted, the committee will judge. Results of considerable practical importance may be obtained by an accurate chemical analysis, chiefly with reference to the proportion of silica, alumina, magnesia, and iron, affecting the durability, discoloration, and expense of working. Time, however, did not permit this investigation.

All of which is respectfully submitted.

DAVID DALE OWEN.

WASHINGTON, *March 11, 1847.*

List of specimens referred to in the foregoing report.

- No. 1 Robinson and Fell's quarry.
 1a Robinson and Fell's lower layer, close to Cold Spring creek.
 2 Griscom and Borrough's quarry.
 2a Griscom and Borrough's top layer, banded with light gray.
 2ab Griscom and Borrough's fine-grained, in nests.
 3 Symington's quarry, large-crystalled marble.
 3a Symington's quarry, sample of large blocks.
 4 Fell and Robinson's quarry, blue variety.
 5 Mrs. Taylor's quarry.
 5a Mrs. Taylor's quarry, crumbling layer.
 5b Mrs. Taylor's quarry, (see specimen with dark color on long exposed surface.)
 5c Mrs. Taylor's quarry, banded with gray stripes.
 5d Chisilla Owens's quarry, fissured.
 6 Chisilla Owens's quarry.
 7 Worthington's (old) quarry.
 8 Baker and Conly's quarry.
 10 Worthington's (new) quarry.
 10w Worthington's, white variety.
 10bl Worthington's, blue variety.
 11 Cooper's quarry, with veins of mica.
 12 Judge Nesbitt's quarry.
 13 Cockey's quarry, compact white.
 14 Mica slate, with garnets.
 15 Point of Rocks quarry, Mr. McGlauchren's.
 16 Chloritic schist, Point of Rocks.
 17 Granite, Waterville branch quarry, near Woodstock.
 17a Granite, Fox rock quarry, near Woodstock.
 18 Granite, Fox rock quarry, near Woodstock.

Laid on the table.

On motion of Mr. Seaton, it was

Resolved, That Dr. Owen be requested to analyze the specimens of white marble, especially Mr. Worthington's and Mr. Symington's, and report thereon.

The chairman laid before the committee letters recommending Mr. Richard C. Murry as superintendent.

Laid on the table.

The chairman laid before the committee a letter from Mr. John C. Rives, recommending Mr. Jones, of Washington city, as bricklayer.

Laid on the table.

The chairman laid before the committee a letter from Mr. Isaiah Lukins, of Philadelphia, relative to a town clock.

Laid on the table.

And, on motion, the committee adjourned.

SIXTH MEETING—MARCH 13, 1847.

Present, Messrs. Seaton, Owen, and Hough.

On motion of the chairman, it was

Resolved, That Mr. Peter Gorman be requested to procure from Bull

run quarry four perch of light gray freestone, to be delivered on the canal, opposite Eighth street, and be put up under the supervision of the architect—one half in broken rubble masonry, the other in range work—finished exactly in the manner in which the said architect recommends; that the above styles, if adopted, should respectively be finished, so as to supply a sample wall, to which, if the above material be adopted, reference may be had in the contract.

Mr. Seaton submitted a letter from I. Mudd, offering his services as superintendent; also, a letter from A. B. McFarlan, regarding the specimen walls and Seneca freestone; also, from the same, a draught of the quarries in the vicinity of Seneca creek; also, from the mayor of Baltimore, and Mr. Long, architect, of that city, recommending Mr. Richard C. Murry as superintendent;* also, from Mr. M. W. Carter, of Fredericksburg, recommending Seneca freestone, and offering his services; also from Mr. John T. Bryant, recommending to purchase one of Mr. Lukins's clocks, Philadelphia; which letters, on motion, were

Laid on the table.

And, on motion, the committee adjourned.

SEVENTH MEETING—MARCH 15, 1847.

Present, Messrs. Seaton, Hough, and Owen.

Mr. Seaton submitted a letter from Robert Barnard, offering his services as treasurer and accountant.

Laid on the table.

The chairman submitted a letter from Governor Francis Thomas, of Maryland, asking an additional examination of the quarry at Point of Rocks, heretofore examined by Dr. Owen.

Laid on the table.

The chairman submitted from Mr. Samuel Worthington the following offer to supply marble for the Smithsonian building:

BALTIMORE COUNTY, *March 13, 1847.*

GENTLEMEN: I will agree to furnish the necessary white marble for the erection of the above institution—say five thousand perch of rubble stone of the size of good building-stone, carefully broken, and placed upon the cars at Cockeysville—at the rate of one dollar and eighty-seven cents per perch of twenty-five feet; or, at one dollar and twenty cents per ton, as weighed by the railroad.

I will agree also to furnish the dimension-stone in the block, and no block to contain less than two cubic feet, at the rate of sixty cents per cubic foot, and placed on the cars at the above-mentioned place; or, by the ton, at six dollars per ton as taken from the quarry, if the stone should be wrought at the quarry, and the carved work completed there; then, an addition of fifty cents per ton will be charged on all stone so worked, to be delivered say in the course of three years, or as may be required.

Very respectfully, your obedient servant,

SAM'L WORTHINGTON.

Messrs. ROBERT DALE OWEN, and others,

Building Committee Smithsonian Institution.

* NOTE.—March 16, letters and application withdrawn.

Mr. Hough, from the sub-committee to whom were referred the specifications of the architect, (James Renwick, jr.,) for the building for said institution, made the following report :

To the Building Committee of the Smithsonian Institution :

GENTLEMEN: I have carefully examined the specifications of the architect, (James Renwick, jr., esq.,) for the building of said institution, and find them elaborately and minutely drawn, both in reference to detail of the work and permanence and durability of the structure. Few, if any, omissions can be discovered, and but few alterations seem to be required for the permanence and durability of the edifice, or for its better security against destruction by fire.

It has been suggested by one of the committee, that the width and depth of the foundation trenches, and, as a consequence, the foundation walls, might with safety be diminished, the inverted arches and the concrete foundations be entirely dispensed with, and consequently with a considerable saving of expense.

In such a conclusion I cannot, without further information, concur.

Whether its foundation trenches may or may not be diminished in depth, will, in my opinion, depend upon the peculiar formation or strata of the earth, which can only be determined by making the necessary borings or excavations.

If, upon experiment, the strata shall be found to consist of firm indurated clay or gravel of sufficient depth for permanence, the depth may be diminished ; otherwise, not.

But in no event could I recommend a diminution of width ; nor would I dispense with either the inverted arches or the concrete foundation, deeming both very essential in preventing an unequal settlement and cracking of the walls of the edifice. I consider the concrete much better adapted to permanence of foundation than any ordinary structure of rock alone, and in no respect more expensive ; and, in so ponderous a structure, all architects and constructors of experience concur in recommending inverted arches to preserve a uniformity of settling between the openings and solids of the building. I would, however, recommend a reservation in the contract for the construction of the building, of the right to diminish the depth of the foundations, with a pro rata reduction of price in case the strata or character of the earth shall be found to admit of it in the opinion of the architect. It may be found, also, that the thickness of the walls of some of the towers, and perhaps the walls of the buildings throughout, may with safety be diminished ; and I would recommend a like reservation in the contract to meet this contingency also.

The idea of constructing the principal stairs in such an edifice with wood, does not, in my estimation, well comport with public opinion, either as to permanence, durability, and appearance, or with the character of the age in which the edifice is to be erected.

I recommend, therefore, without hesitation, if the funds will possibly admit of it, that the principal stairs of both the north and south central entrances to the principal building be constructed of stone, as high, at least, as the museum floor.

I also recommend that the wood tessellated floor of the museum be dispensed with, and that, instead thereof, there be a single floor of $1\frac{1}{4}$ -inch yellow pine plank, with the intention of covering it with stone or compo-

sition flagging at a future day ; or, what I would deem preferable, dispense with the wood floor altogether at first, and raise the deafening above so as to cover the floor-beams, upon which lay a floor of stone flagging. This it is believed may be done at a small expense over the wood Mosaic, be greatly more secure against fire, and require much less expense in cleaning and repairs.

I would also recommend as a security against fire, in case of the burning of the roof, that a rough floor be laid upon the beams above the upper ceiling, next to the roof, throughout the building, and covered with a suitable thickness of lime-water cement ; over which, when dried, a covering of common salt, or a cement of salt and ashes, be evenly spread, carefully filling all the cracks or crevices of the cement.

This is the French method of fire-proofing the upper part of buildings, and has been to some extent adopted in some sections of this country with entire success. This would be attended with comparatively little expense, and would, it is believed, render the body of the building entirely secure against destruction by fire in case the roof should be burnt.

All of which is respectfully submitted.

WM. J. HOUGH.

WASHINGTON, *March 15, 1847.*

On motion of Mr. Seaton, it was

Resolved, That Mr. Hough be requested to examine into the expediency of dispensing with any portion of ornamental stucco in the building.

The chairman submitted from Dr. Owen the following

Report on the sandstones of the Potomac.

After completing the report of the white marbles and granite of Baltimore county, Maryland, I proceeded, according to instructions, on the afternoon of the 11th of March, to inspect the quarries of sandstone in the neighborhood of Seneca creek, Montgomery county, Maryland.

About 21½ miles from Washington city, on the line of the Chesapeake and Ohio canal, the talcose and chloritic schists of the Great falls of the Potomac are succeeded by freestone and marly beds of the new red sandstone formation. These deposits are of various colors, from a light greenish-gray, or dove-color, to a deep red or brown.

The first quarry visited is situated on Bull run, 23 miles from Washington. The excavations have hitherto been carried on from 250 to 300 yards on the north side of the canal ; but the ledges of rock extend down to its margin, and can be quarried with nearly as much facility a few paces from the canal as where operations are now carried on.

The dip of the stratification slopes at an angle of 15° or 20° upwards from Bull run. The beds, suitable, both as regards color, durability, and ease with which they can be cut, are fortunately near the surface in the ravine of Bull run. By commencing quarrying operations near the bed of this stream, and working up the western slope, blocks of large dimensions can be obtained with comparatively little labor. The beds which have been chiefly worked here are layers of a deep red color, (see specimen No. 18,) and layers of a purplish-gray, (No. 19,) which, by exposure, acquire a lighter and more pinky hue. The latter is the rock most

suitable for building purposes, its color being agreeable, and, in the opinion of men of good judgment and taste, appropriate for the Norman style of architecture. This rock possesses one property in particular which recommends it to the attention of builders. When first removed from the parent bed, it is comparatively soft, working freely before the chisel and hammer, and can even be cut with a knife: by exposure, it gradually indurates, and ultimately acquires a toughness and consistency that not only enables it to resist atmospheric vicissitudes, but even the most severe mechanical wear and tear. Abundant evidence of this is afforded in the buildings of the neighborhood, in several of the locks and aqueducts, and also in ledges and blocks exposed in the bed of Bull run. The deep red varieties have been chiefly used in these structures. By close inspection of slabs exposed now 20 years to atmospheric agencies and severe mechanical friction, the mark of the dressing-chisel is still sharply imprinted in the surface. On the perpendicular wall of the aqueduct, where the water has been oozing through the joints and trickling down its face, forming an incrustation of carbonate of lime, one may observe, where this calcareous crust has scaled off, the grooves and ridges of the surface still nearly as distinct as when the block first came from the hand of the stonecutter.

The angles and edges of the keystones of the arch, placed under these most unfavorable circumstances, are sharp and entire. Only one or two blocks of this work of 20 years' standing show signs of decay; but these seem to be such as either have not been well selected, or have been placed on the edge in the wall.

Even the tow-path of this aqueduct, over which the horses and mules have been travelling for 20 years, is still unimpaired. Even the corners around which the heavy lock-gates swing, show no signs of chipping. Blocks were pointed out to me in the bed of Bull run, which had been rejected by the engineers as being of too soft and perishable a nature, and which have been exposed for 20 years to the action of running water and alternate thawing and freezing, which exhibit little or no alteration, except that they have become so indurated that they turn the edge of the chisel, and are a little dingy on the surface.

Mr. Peter, on whose property this quarry is situated, has built a fine barn of these freestones. He assures me that there are stones in that barn 50 years old, which have been in three buildings. On one corner-stone, where the figures "1824" had been cut in that year *by the point of a penknife*, the rock now is so hard that it would soon turn the edge of a well-tempered tool.

Interstratified with these grit-stones are some argillaceous, marly-looking beds, (No. 20,) especially prevalent towards the upper outcrop of the stratified mass constituting these hills. These layers are, of course, entirely unfit for any kind of building purposes. The sandstone beds differ very much, not only in color, but also in hardness and texture. Some are fine-grained, and can be wrought to a sharp arris; others are coarse-grained, and even assume the character of a conglomerate: these latter, of course, are entirely unfit for the finer purposes of architecture. Amongst a series varying so much, not only in color but in texture and composition, a careful selection becomes a matter of the utmost importance.

About a quarter of a mile further west, in a bold escarpment of 20 or 30 feet in height, close to the margin of the canal, is the "College quar-

ry." Here the strata assume a somewhat different character. Above, they are of a crumbling, argillaceous, marly nature, producing a retentive soil, well adapted for the growth of wheat and corn; beneath these disintegrating beds are red and rather argillaceous freestones of an inferior quality, which pass downwards into light greenish-gray beds, varying from a foot to two or two and a half feet in thickness.

At about fifteen feet from the top is the most important bed exposed in the quarry, of a greenish-gray hue, usually called the "dove-colored bed;" see specimen No. 21. Beneath this, as far as can be ascertained from the rubbish strewed over the lower face of the quarry, are brown and bluish-purple beds, (No. 22,) of inferior quality. Here, as at Bull run, the strata dip to the west at an angle of about 15° or 20° ; so that the middle layers crop out towards the summit of the hill. Near the top the dove-colored bed is two feet thick. Sixty feet down the slope of dip it has increased to four feet; forty-five feet more, it is six feet; and fifty-four feet more, it is nine feet thick. At the same rate of increase to the west, beyond where it is exposed to near the level of the canal, it would be twelve to thirteen feet. The color of this bed is rather cold, but it is much admired by some persons. It is faintly striped parallel to the stratification, (see 21a); it has also some small faint spots, or "pock," as the stone-masons call it, (see 21a), not quite so hard as the body of the rock. This stratum is not near so easily worked as the best beds in Bull run quarry; indeed it is harder to work than marble. If this dove-colored bed is worked extensively, there will be considerable expense incurred in stripping, since there are fifteen feet of solid strata overlaying it.

A few hundred yards west of this is another quarry, equally bold, and composed of similar beds, their tints being for the most part gray, greenish-gray, and dove-colored.

Beyond this, along the canal, the ground is flat and wet, and the hills recede towards the north, so that to the west of the last described quarry, for fifteen or twenty miles, building-material cannot be procured so convenient to navigation.

Between the College quarry and Bull run there are several localities close to the canal, where some rock has been quarried. The beds exposed are of warm red tints, similar to the red sandstones in Bull run. At these quarries, and in Bull run, the material for the construction of the aqueduct and locks in this part of the Ohio and Chesapeake canal were obtained. These works have stood the test of time as well, if not better, than any of the other structures along the whole line of this improvement.

The investigations in the vicinity of Seneca creek prove conclusively that the bluffs on the banks of the canals, for about three-quarters of a mile, afford abundance of freestone for building purposes, equal and even superior to those which are obtained in the quarries of New Jersey, which supply the New York market.

If this freestone should ultimately become the choice of the building committee of the Smithsonian institution, a very careful selection will be necessary not only as regards the particular color preferred, but that it be those softer varieties of pure grit-stone, free from all argillaceous or marly admixture, and containing none of those "pock" marks, or small spots and cavities, which not only injure its appearance, but detract from its

otherwise durable nature. They must also, to insure durability, be in all cases laid on the bed as in the natural position in the quarry.

The singular property which the best quality of these freestones possesses, of hardening by exposure, is one of its most valuable characteristics, permitting it to be wrought at less expense than marble, and imparting to it a durability which increases with age. It has been a question, whether this property is due to iron in its composition, passing from a lower to a higher degree of oxidation, or to the presence of a sub-carbonate of lime, becoming gradually by exposure a carbonate of lime, and acting as a cement to the particles of silex. A minute chemical analysis would no doubt throw light on this matter. It might prove that this phenomenon depends on some other property not yet suggested.

This same property of hardening by exposure is possessed in a remarkable degree by a building-stone which has been excavated for centuries from St. Peter's mountain, in the vicinity of Maestrich, in Belgium, and which is the terminating member of the cretaceous formation of the Mesozoic period. This rock is a calcareous freestone, and is generally supposed to owe its hardening property to a chemical change which takes place in the calcareous cement. The Seneca freestone, however, does not effervesce in mass with acid; and this fact militates against the idea of its indurating property being due to any peculiar form of carbonate of lime.

In concluding this report, it may not be out of place briefly to advert to two letters which I addressed from Indiana, under date the 22d and 25th of October last, to one of your committee, (the Hon. Wm. J. Hough,) on the subject of the sandstones of the Potomac, which at that time I had not seen. In these letters, (judging from the fact shown from a geological map in my possession, that the red sandstone formation which furnishes highly-prized building-material in New Jersey and Pennsylvania passes thence to the southward, and crosses the Potomac at Noland's ferry, descending that river on the Maryland side and crossing Monocacy and Seneca creeks,) I took the liberty of suggesting the importance of a careful examination of these localities, before selection was made of a more distant and expensive building-material. Mr. Hough will recollect that the second of these letters contains the following paragraph: "it seems indeed strange, that, if really good and durable freestones are to be had on the canal or river above Washington, these should not already have been used for the public edifices there; but sufficient examples are to be found of the very best building-material having been overlooked through a long series of years, even in the vicinity of populous cities, for lack of minute and discriminating examination. My own firm belief is, that a durable sandstone, equal or nearly equal to that used in Trinity church, can be discovered in sufficient quantities in the vicinity of the Potomac or the canal."

It may afford some evidence of the confidence with which geological science may be appealed to in search of practical results, that an actual examination of one of the localities above designated has fully confirmed all, and more than all I had anticipated concerning the material they furnish.

I annex a rough sketch of the College and Bull run quarries, showing the dip of the strata and the shape of the escarpments along the bank of the canal, where the freestone is found.

All which is respectfully submitted.

DAVID DALE OWEN.

WASHINGTON, *March 15, 1847.*

List of specimens referred to in the foregoing report.

18. Red Potomac sandstone, Bull run, near Seneca creek, Montgomery county, Maryland.
19. Grayish-purple or pink variety of sandstone, Bull run, near Seneca creek, Montgomery county, Maryland.
20. Disintegrating argillaceous beds, College quarry, west of Bull run, Montgomery county, Maryland.
21. Dove-colored bed, College quarry, west of Bull run, Montgomery county, Maryland.
- 21a. Banded variety of 21.
22. Purple and brown beds, No. 21, College quarry, west of Bull run, Montgomery county, Maryland.

And, on motion, the committee adjourned.

EIGHTH MEETING—MARCH 16, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

The subscriber will furnish all the stone necessary for the cutting for the Smithsonian Institution upon the dock at Washington, for the following prices:

For East Chester marble, such as the Post Office Department is built of, for the sum of seventy-five cents per cubic foot.

Mount Pleasant or Sing Sing marble, from the Mount Pleasant prison, for the sum of fifty-five cents per cubic foot.

JAMES HALL,
Westchester County, New York.

Hon. ROBERT DALE OWEN.

WM. J. HOUGH.

W. W. SEATON.

P. S.—I will name Horace Butler and James Foster, both of the city of New York, as security for the faithful performance of the above.

JAMES HALL.

The chairman laid before the committee the following letter :

BALTIMORE, *March 15, 1847.*

We, the undersigned, do hereby agree to deliver to the committee of said institution white crystallized marble for rubble work, on the cars at the quarry, in pieces weighing from 75 to 3,000 lbs. each, at \$2 20 for 3,000 lbs. ; it being considered equal to one perch of stone.

If the range work should be adopted, we will agree to deliver the stone, as per specification of 8 in bed, at the building in Washington, at 50 cents per superficial foot.

We will also agree to furnish the dimension-stone, delivered at the building in Washington, at 53 cents per cubic foot for stone not exceeding 1,000 lbs. in weight ; from 1,000 to 2,000 lbs., 57 cents ; from 2,000

to 3,000 lbs., 65 cents ; and from 3,000 to 4,000 lbs., 72 cents per cubic foot.

We name M. S. and J. T. for our security.

Respectfully,

GRISCOM & BORROUGH.

To the BUILDING COMMITTEE
of the *Smithsonian Institution*.

P. S.—We should like to furnish the lime for the building, also, and would deliver it at a reasonable price.

G. & B.

The chairman laid before the committee the following letter :

BALTIMORE, *March 15, 1847.*

We will agree to deliver to the committee crystallized *marble* in *blocks*, for *rubble work*, weighing from 100 to 300 lbs. each, on the car at the quarry, at \$2 for 3,000 lbs., this amount to be considered equal to a perch of stone ; and should the *range work* be adopted, with 8 to 10-inch bed, then we will agree to deliver stone at 49 cents per superficial foot at the *building* ; and for *dimension-stone*, not exceeding 1,000 lbs., 50 cents per cubic foot ; and from 1,000 to 2,000 lbs., 53 cents ; 2,000 to 3,000 lbs., 55 cents ; and all other stone, from 3,000 to 5,000 lbs., 60 cents. And we would also wish to contract for the lime, and name for our securities C. C. A. and J. S. S.

Very respectfully,

FELL & ROBINSON.

To the COMMITTEE
of the *Smithsonian Institution*.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

I propose to sell to the building committee of the Smithsonian Institution the right to quarry such stone as they or their agent may select in my quarry, at the rate of fifty cents per perch. My quarry is situate immediately upon the Baltimore and Susquehanna railroad.

The stone can be placed upon the cars from the quarry with very little labor. The distance from Baltimore per railroad is 15 miles.

E. J. COOPER,

79 *South High Street, Baltimore.*

The chairman laid before the committee the following letter:

BALTIMORE, *March 15, 1847.*

GENTLEMEN: We propose to furnish from the Fox Rock granite and Waterville quarries, in Baltimore county, stone for building the Smithsonian Institution, of the same color and quality as that used in the rear of the General Post Office, at the following prices :

The rough rubble stone, delivered at the depot in Washington city, at 16 cents per foot.

The dimension-stone, for fine work, at 46 cents per cubic foot.

The split ashlar, in place of the rough rubble stone, we will furnish at 37½ cents per foot.

The above prices are estimated, provided the price of freight on the railroad is reduced to 2½ cents per ton per mile.

All of which is respectfully submitted.

SUMWALS, GREEN, & CO.

Hon. ROBERT DALE OWEN,

WM. J. HOUGH,

W. W. SEATON,

Committee.

The chairman laid before the committee the following letter :

WASHINGTON CITY, *March 15, 1847.*

GENTLEMEN: I propose to deliver what lime may be wanted in the erection and finishing of the Smithsonian Institution, in this city, at forty cents per bushel.

The lime shall be burnt from the best alum stone, with wood, and shall be warranted of the first quality.

I will guaranty that two bushels and a peck shall be sufficient for laying a thousand brick, provided proper sand is used.

E. J. COOPER,

79 South High Street, Baltimore.

The chairman laid before the committee the following letter :

WASHINGTON CITY, *March 15, 1847.*

The undersigned proposes to furnish the white pine and yellow pine necessary for the Smithsonian Institution at the following prices:

200,000 b. m. white pine timber, at \$23.

75,000 $\frac{1}{2}$ b. m. yellow pine narrow boards, in the rough, at \$26 50.

75,000 $\frac{5}{8}$ b. m. ditto, dressed, tongued and grooved, at \$37.

25,000 b. m. white pine plank, at \$30.

Common cullings, at \$14.

The above to be delivered here free of charge, and in such quantities as may be ordered, from time to time.

JOHN PURDY.

The chairman laid before the committee the following letter :

MARCH 7, 1847.

SIR: I have seen, from the proposals for the construction of the institution, that stone from the upper Potomac may be used in the building. I will take leave to inform you that I have quarries of the red sandstone within a short distance of boat navigation, from which were constructed the aqueduct and locks at and below the mouth of Seneca. The quarry will either be sold, or otherwise, as may best suit the views of the par-

ties. I shall be pleased to have a call before engagements be entered into, for the purpose of inspection,

Respectfully,

CHARLES VINSON,
Near Seneca Mills.

To the CONTRACTOR
on the Smithsonian Institution.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

GENTLEMEN : I will furnish bricks, lime, cement, and sand, and lay the same, for fourteen dollars and seventy-five cents per thousand. The materials shall be of the best quality, and the workmanship done in the best manner ; and will give for securities for the performance of the same, John C. Rives and Wm. H. Gunnell, esquires.

Yours, &c.,

ZEPHANIAH JONES.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

The chairman laid before the committee the following letter :

WASHINGTON CITY, *March 15, 1847.*

I hereby propose to furnish the material and lay one million bricks, according to plan and specification, for the sum of eleven thousand five hundred dollars.

Yours, very respectfully,

J. RAY.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

GENTLEMEN : The undersigned proposes to furnish and lay all the bricks that may be required about the Smithsonian Institution, to wit :

In the walls, per thousand, measured, nine dollars and sixty-two and a half cents.

Or, per cubic foot, fourteen and the fourth of a cent.

All the bricks to be hard ; lime of the best Potomac stone ; sand clean and sharp.

If these amounts satisfy the honorable committee and the architect, then it is time, I hope, (in my opinion,) to furnish a security, or retain a per centage on a certain amount of money, for the faithful compliance with this bid.

Yours, with respect,

THOMAS LEWIS.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

I propose to furnish one million of the best hard brick, for the Smithsonian Institution, at four dollars and ninety three cents per thousand.

I propose to furnish the best hard brick for 175,000 cubic feet of backing, at four dollars and ninety-three cents per thousand.

E. KINGMAN.

Hon. R. D. OWEN,

W. J. HOUGH,

W. W. SEATON,

Building Committee of the Smithsonian Institution.

I offer Messrs. Tyson and Brickley as my securities for the performance of the contract.

E. K.

The chairman laid before the committee the following letter :

Proposals to deliver to the building committee of the Smithsonian Institution, at the site of their building in Washington, white marble in the rubble, and in the range and cube form.

For every perch of 3,100 lbs., in such shape as will facilitate the preparation by the mason, and in sizes of 70 to 300 lbs., \$4 60.

For range work, with split faces, bedded to make a joint not over half an inch, and roughly pitched off to a line in courses of 10 to 18 inches, per superficial foot, measured face only, 47 cents.

For marble in the cube form, quarried as near the size wanted as practicable, per cubic foot, (large crystal,) 50 cents.

Medium crystal from my quarry, 62½ cents.

Fine crystal from my Owens quarry, in small blocks for foliage work, 70 cents.

My bondsmen are John W. Brown and Wm. Baily, esquires, of Baltimore.

THOS. SYMINGTON.

WASHINGTON CITY, *March 15, 1847.*

The chairman laid before the committee the following letter :

Proposals by George Crest, of New Cumberland, Pennsylvania, by his agent, Thomas Symington, of Baltimore, to deliver in Washington city, for the building of the Smithsonian Institution, white pine sawed timber, viz :

For all white pine sawed timber, to diminution size, out of good sound logs, delivered in Washington city, on the landing, per 1,000 feet (board measure) \$18.

[NOTE.—In case the freight from Havre-de-Grace is less than three dollars per M., a corresponding reduction will be made. In all cases the building committee are required to pay the captains the freight from Havre-de-Grace to Washington city. The said freight will be as part payment for the lumber.]

Mr. Crist is proprietor of one of the largest saw-mills on the Susquehanna river. He is a responsible man, and has directed me to say that he

will give the necessary bonds, either from his own neighborhood or from Baltimore.

He further states, that he would like to deliver the whole quantity during the ensuing season. If desirable, a sample of his lumber can be seen at the U. S. arsenal, Greenleaf's point, delivered there some two or three years ago.

THOS. SYMINGTON.

BALTIMORE, *March 15, 1847.*

The chairman laid before the committee the following letter :

Proposals to deliver to the building committee of the Smithsonian Institution, at the site of their building in Washington city, white marble ashlar.

For ashlar with horizontal pointed face, as sample No. 3, in the basement of the City Hall, 6 inches bed, per superficial foot, measured face only, 49 cents.

For ditto, averaging eight inches bed, 63 cents.

For ditto, machine-dressed face, as sample No. 4, averaging 6 inches bed, 49 cents.

For ditto, averaging 8 inches bed, 63 cents.

For split ashlar, in range courses of 10 to 18 inches, from my Owens quarry, from whence sample No. 4 was procured, bedded, so as to make a joint not over half an inch, average 6 inches bed per superficial foot, measured face only, 40 cents; and to have a draught cut all round the edges on the face.

For ditto, as above, averaging 8 inches bed, per superficial foot, face only, 49 cents.

I name the following gentlemen as my bondsmen, viz: John W. Brown and William Baily, esqs., of Baltimore.

THOS. SYMINGTON.

WASHINGTON CITY, *March 15, 1847.*

The chairman laid before the committee the following letter :

Proposals for cutting marble for the buildings of the Smithsonian Institution, the marble to be that which is procured from the large or medium crystal quarries near Baltimore.

FOR CUTTING.

Steps, if square, worked fine, square droved or rubbed, per superficial foot, 35 cents.

It worked with the tooth chisel, (as sample No. 2, deposited in the sample room,) per superficial foot, 25 cents.

Measure length by girth; if the ends show, add thickness to length.

Water-table, splayed, without members, fine cut or rubbed, per superficial foot, 40 cents.

If tooth-chiselled, 30 cents.

If moulded, add ten cents per superficial foot lineal for each member; measure length by girth from wall to wall.

Plain ashlar, fine cut or rubbed, per superficial foot, 35 cents.

Tooth chiseled, 25 cents.

Measure face only.

Plinth and base course of all the door and window jambs and mullions :

Fine cut and rubbed, per superficial foot, \$1 50.

Tooth-chiselled, \$1 10.

Measure the height of course for the length ; and for the girth, girt from where the course joins the ashlar in front, around the bases, to where the fine work ceases.

[NOTE.—If any foliage is to be cut upon any of the bases, an extra price will be charged for the foliage ; to be determined by the architect. The general rule to be observed, in all such cases, will be to allow the contractor a fair per centage over the operator's charge for the said work.]

Doors and window jambs, arches and mullions :

If plain splayed, fine cut, and rubbed, per superficial foot, 40 cents.

Tooth-chiselled, 30 cents.

Measured length, by girth from ashlar in front, to casing ; for the circle or arch, add one half measure.

If moulded with one or more rebats and columns, fine cut, or rubbed, per superficial foot, \$1 10.

Tooth-chiselled, per superficial foot, 80 cents.

Measure the height of each course for the length ; and for the girth, girt from the ashlar in front around the mouldings to the casing in the rear ; add for the arch a half measure.

[NOTE.—If any of the members are to receive a cable cord, zig-zag, or other device, which must be worked upon the member after it shall have been finished, for the price per lineal foot of such device apply rule No. 1.]

Foliage caps :

For engaged columns of 5 inches diameter and under, finely cut, and rubbed, each \$4.

Rough cut, each \$2.

[NOTE.—The course on which they are cut will be measured, and charged as a portion of the door or window jamb.]

Foliage caps, moderately plain :

For disengaged columns of 5-inch diameter and under, finely cut, and rubbed, each \$10.

Roughly cut, \$6.

For disengaged columns of 12-inch and under, finely cut, and rubbed, each \$35.

Roughly cut, each \$20.

Circular label mouldings over doors and windows :

If not over 12 inches girth, finely cut, per lineal foot, \$1 10.

Tooth-chiselled, 80 cents.

[NOTE.—The stones on which it is cut are measured and charged according to their class.]

Foliage drops, brackets, or modellions' buttresses, (apply rule No. 1 :)

If finely cut, or rubbed, per superficial foot, 40 cents.

Tooth-chiselled, 30 cents.

Measured as ashlar.

Buttress caps, plain splayed, finely cut, per lineal foot, 40 cents.

Tooth-chiselled, 30 cents.

Moulded, per foot lineal, finely cut, etc., 80 cents.

Tooth-chiselled, 65 cents.

Measured along the eave.

[NOTE.—The course on which the cap is cut is measured and charged according to its class.]

Corbel courses :

(Such as the one that extends around three sides of the north front porch, which is $3\frac{1}{4}$ feet high. The upper course as plain ashlar; the lower course, measure face and bed, and priced as ashlar.)

For sinking the arches, each finely cut, \$3 50.

Tooth-chiselled, \$2 50.

For sinking arches of less size, in proportion.

Label mould, with octagon front, over corbel courses :

Per superficial foot, finely cut, or rubbed, 45 cents.

Tooth-chiselled, 35 cents.

Measure length by girth of what shows.

Hook label, or similar moulded courses :

Per superficial foot, finely cut, \$1 10.

Tooth chiselled, 80 cents.

Measured length by girth of what shows.

Battlements over front porch, and all similar work :

Per superficial foot, finely cut, 35 cents.

Tooth-chiselled, 25 cents.

Measure as ashlar.

Battlements, cap or coping, if plain or splayed :

Same as plain octagon label course.

If moulded, according to its class.

Window sills :

Splayed, per superficial foot, finely cut, and rubbed, 45 cents

Tooth-chiselled, 35 cents.

[NOTE.—If part of the plinths of the window jambs or mullions are worked upon the splay, or if a check is sunk in the splay, to receive the sill, for the plinth or check apply rule No. 1.]

Circular windows :

The arch jamb, the same as their class. For the mullions, caps, and plinth, the same as their class; for the centre piece and tracery, apply rule No. 1.

Interlaced arches, the columns, caps, &c. :

For the interlaced arching, apply rule No. 1.

For the columns, caps, and bases, measure and charge as their class.

Cornice or coping :

Octagonal face, finely cut, and rubbed, per superficial foot, 40 cents.

Tooth-chiselled, 30 cents.

If moulded, according to its class.

Measure top bed and girth of face.

Finials : apply rule No. 1.

Corbel course, or central front tower, and all such :

Each course according to its class.

For the band or panelled course, apply rule No. 1.

Sill course of semicircle and fillet, and 5 sides of octagon :

Finely cut, and rubbed, per superficial foot, 80 cents.

Tooth-chiselled, 70 cents.

Measure length by girth of what shows.

Panelled arcade: apply rule No. 1.

Pinnacles on principal tower :

Finely cut, and rubbed, each \$240 68.

Tooth-chiselled, each \$208.

Flagging :

Square marble tile, $2\frac{1}{2}$ inches thick, and 12 to 24 inches square, of two colors, delivered at the building ready for laying, per superficial foot, 35 cents.

Marble tile :

$1\frac{1}{4}$ inch thick, and 4 to 6 inches of two or more colors, per superficial foot, delivered ready for laying, 50 cents.

$1\frac{1}{4}$ inch thick, and 11 to 12 inches square, delivered and ready for laying, per superficial foot, 35 cents.

The foregoing list of articles and prices will embrace all the kinds of cut marble work about the building. I will comply with the printed specifications, (subject to the foregoing rule,) and all requirements stated in the advertisements for proposals.

My bondsmen are John W. Brown and William Baily, esqs., of Baltimore.

Dowels and clamp holes :

For every $\frac{5}{8}$ -inch hole, sunk 3 inches, 2 cents.

For every 1-inch hole, sunk 3 inches, 3 cents.

If sunk more, in proportion.

THOS. SYMINGTON.

BALTIMORE, *March 13, 1847.*

The chairman laid before the committee the following letter :

BALTIMORE, *March 15, 1847.*

GENTLEMEN : We propose to cut and dress all the fine work mouldings, &c., for the Smithsonian Institution. at (\$3) three dollars per cubic foot. We will also build all the stone-masonry at \$2 per perch, mason measurement, except the concrete under the foundations, which is not embraced in this proposal.

Respectfully submitted.

SUMWALS, GREEN & CO.

HON. ROBT. DALE OWEN,
WM. J. HOUGH,
W. W. SEATON,
Committee.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

GENTLEMEN : I propose to build and construct the items of the Smithsonian institution, herein contained, in a workmanlike manner, agreeably to the plans and specifications of the architect, for the following aggregate sum, viz : Digging foundations, concrete, rough stone in foundation below the superstructure, setting the rubble-facing, and cut-stone work of all parts of the building, and back-filling the same ; sess-pools and flagging for the foundations of partition walls—furnishing all the materials, except the rubble-facing and cut stone—for the sum of thirty-six thousand two hundred and fifty dollars.

NOTE.—The material for scaffolding, the brick and brick work, and the north room flagging, are not included in the above. If I furnish the iron cramps, dowels and anchors, the price will be six cents per pound. In case range work is adopted instead of the rubble-facing, one thousand dollars will be deducted from the above.

I refer you to the following gentlemen : Chas. B. Fisk, esq., chief engineer on the Chesapeake and Ohio canal ; A. B. McFarlan, esq., Robert Brown, and Andrew Small, esq., of Washington city. I name for my bondsmen Mr. Jno. Higham, of Baltimore, and Andrew Small, esq., of Washington city.

JAMES MACPHERSON.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

The chairman laid before the committee the following letter :

WASHINGTON, *March 15, 1847.*

GENTLEMEN : I do hereby agree to furnish all the materials and perform the brick work of the building, according to the plan and specification agreed upon by the Regents of the said institution, for the sum of twenty thousand three hundred and fifty dollars, (\$20,350.)

Or, I will furnish and lay one million of hard bricks for the sum of fifteen thousand dollars, (\$15,000.)

Or, I will furnish all materials, provided all the outer walls are backed up with brick in the place of rubble-stone, for the sum of thirteen dollars and forty cents per thousand, (\$13 40.)

GEORGE H. PLANT.

To the BUILDING COMMITTEE
of the *Smithsonian Institution*.

P. S.—If my bid be accepted, I am prepared to give the security required.

G. H. P.

The chairman laid before the committee the following letter :

FREDERICK COUNTY, *March 15, 1847.*

The undersigned regrets very much that he did not see, until very recently, your proposals for bids to furnish materials for the building of the Smithsonian Institution, because he has not now time to ascertain whether the Chesapeake and Ohio Canal Company will consent to reduce the toll for transportation of marble on this canal.

Assuming that the tolls will not be reduced, he offers to furnish 110,000 feet of beautiful white marble, for rubble-facing, one foot thick, at 60 cents per foot; and 20,000 cubic feet dimension-stone, of white marble, for cutting, at 90 cents per foot. And will give as securities for the faithful execution of such a contract, Sebastian Ramsburg, John C. Osborn, John Hagan, and Joshua Dill, all of whom hold valuable real estate in, and are citizens and residents of, this county.

The undersigned is not certain whether it is expected that those who propose to furnish the materials for building above mentioned must also submit proposals for the construction of the institution, and has therefore submitted proposals for materials only. If it is the intention of the committee to have the materials furnished and this building constructed under one and the same contract, he will undertake, if time be afforded for this purpose, to form a company that will submit a proposition of that character, at an early day, and on terms that must be esteemed desirable. This is said confidently, from his knowledge of the superior quality of the marble he proposes to furnish, and from the facility with which it can be delivered at Washington.

Very respectfully, your obedient servant,

PHILIP McGAUGHEN,
Point of Rocks.

Hon. R. D. OWEN,
W. J. HOUGH,
W. W. SEATON,

Committee, Smithsonian Institution.

All of which letters were laid on the table.

The committee then, in the presence of the architect, James Renwick, jr., and of the superintendent, Robert Mills, proceeded to open the bids, and found them as by the following table :

No.	Names.	Stonecut- ting.	Carpenter work.	Mason work.	Seneca rub- ble.	Seneca cut.	Marble rub- ble.	Marble cut.	Granite.	Furniture.
1	Charles L. Coltman	-	-	-	\$278,000	-	\$300,000	\$318,000	-	-
2	William H. Digges	-	\$68,000	-	305,000	-	-	-	-	\$11,000
3	Francis Mohun	-	88,000	-	-	-	-	-	-	-
4	Joel Downer	-	51,300	-	-	-	-	-	-	-
5	Bell, Packie & Co. (Ashlar ranged.)	\$119,600	-	-	-	-	-	-	-	-
6	B. B. Curran	-	65,200	-	-	-	240,000	-	-	9,200
7	Jos. Bryan	-	74,700	-	-	-	-	-	-	-
8	Jas. Strang	-	-	\$81,000	-	-	-	-	-	-
9	Butler, Adams, & Came- ron	-	-	-	-	-	223,500	235,000	-	-
	Do do do	79,500	{ 144,000	{	-	-	-	-	-	-
		106,500	{ 129,000	}	-	-	-	-	-	-
10	James Dixon & Co.	-	-	-	196,000	-	-	-	-	-
11	Gilbert Cameron	-	-	-	200,000	\$203,000	-	-	-	-
12	T. M. Niven	-	-	-	220,000	221,500	227,000	230,500	-	-
13	Jno. Sniffen	-	63,000	-	-	-	-	-	-	20,000
	Do (tesselated floor)	-	-	1,500	-	-	-	-	-	-
14	F. Gerard	-	-	-	214,000	219,500	225,000	230,500	-	-

As each of the foregoing bids was opened, it was labelled "Opened March 16, 1847," each of the building committee adding his initials.

As soon as all the bids were opened and their amounts compared, a letter was prepared and addressed to six of the bidders, to wit:

1. Messrs. James Dixon & Co.
2. Butler, Adams, and Cameron.
3. T. M. Niven.
4. Gilbert Cameron.
5. F. Gerard.
6. B. B. Curran.

The letter is as follows :

OFFICE SMITHSONIAN INSTITUTION,
March 16, 1847.

SIR: Please to inform the building committee whether your proposals include furniture, as per specifications, or not; also, please state what are your separate estimates on mason work, carpenter's work, and stone-cutting.

Your answer by this evening at six o'clock will oblige, sir, your obedient servant,

ROBERT DALE OWEN,
Chairman Building Committee.

The letters were placed in the hands of the messenger at $\frac{1}{4}$ past one o'clock.

And, on motion, the committee adjourned.

NINTH MEETING—MARCH 17, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman laid before the committee the following replies to the letter addressed yesterday to sundry bidders.

WASHINGTON, *March 17, 1847.*

SIR: In answer to your letter of this day, and in compliance therewith, I have the honor to state that my bid for the carpentry work included the furniture, in accordance with specification, as also my general bid.

My separate estimates, constituting the bid for the whole building, were—

Mason work	-	-	-	-	\$80,000
Stone-cutting	-	-	-	-	94,800
Carpentry work	-	-	-	-	65,200

I would beg leave here to explain that my bid for the whole job did not contemplate the erection of the building of Seneca stone, but of white marble or granite: I should deduct \$35,000 from the amount if the building committee decide upon using that kind of stone,* instead of the more beautiful, costly, and durable marble or granite.

Respectfully, yours, &c.,

B. B. CURRAN.

Hon. ROBERT DALE OWEN,
Chairman of Building Committee.

* This bid is for Seneca rubble.—R. D. O.

GENTLEMEN: In reply to your letter of this morning, I beg leave to answer that I did not include the furniture in my estimate; and the separate estimates from which I made up my proposition were as follows:

SENECA.

<i>Rubble.</i>		<i>Cut.</i>	
Cutting and stone	- \$70,000	Cutting and stone	- \$70,000
Stone for face	- 5,000	Stone for face	- 16,000
Mason	- 60,000	Mason	- 58,500
Fire-proofing	- 12,000	Fire-proofing	- 10,000
Carpenters	- 67,000	Carpenters	- 65,000
	<u>214,000</u>		<u>219,500</u>

MARBLE.

Cutting and stone	- \$75,000	Cutting and stone	- \$75,000
Stone for face work	- 12,000	Ashlar	- 20,000
Mason	- 61,000	Mason	- 58,500
Fire-proofing	- 10,000	Fire-proofing	- 10,000
Carpenter	- 67,000	Carpenter	- 67,000
	<u>225,000</u>		<u>230,500</u>

F. GERARD.

WASHINGTON CITY, March 16, 1847.

In answering your letter that I received this morning, I beg leave to say, that in my estimate to build your job I did not make any offer for furniture, as I always thought it not included in the building proposal.

Separate bills of Seneca stone.

Mason work	-	-	-	\$79,000, with rubble.
Carpenter work	-	-	-	60,000, do.
Stone-cutting	-	-	-	61,000, do.

If you put in ashlar, you would add to the above bill \$3,000—making \$203,000.

I am, sir, very respectfully, &c.,

GILBERT CAMERON.

Hon. R. D. OWEN.

WASHINGTON, March 16, 1847.

SIR: In answering yours of to-day, I have to inform you that my mason's bill is	-	-	-	\$50,000
Carpenters' bill	-	-	-	66,000
Cut stone	-	-	-	80,000

196,000 (rubble.)

If cut in range work, add - - - 6,750

202,750

If in marble (ashlar) from Symington's quarry, \$228,500.

If in marble from Symington's quarry, (rubble,) \$224,000.

JAMES DIXON & CO.

Hon. ROBERT DALE OWEN.

N. B.—Furniture included in both instances.

J. D.

WASHINGTON, *March* 16, 1847.

GENTLEMEN: After examining Mr. Adams's papers, I have been able to discover the mistake in the bill that we hurriedly put in last night, and must express my thanks for your kindness in enabling me to correct it. The following I think is correct:

East Chester marble—furnishing and cutting marble	-	-	-	-	\$79,000
Mason work with rubble	-	-	-	-	82,000
Carpenters, furnishing all	-	-	-	-	62,000
					<hr/> 223,000
Add ashlar to this	-	-	-	-	25,000
					<hr/> 248,000
Reductions on account of ashlar	-	-	-	-	17,000
					<hr/> 231,000
Mount Pleasant marble, ashlar	-	-	-	-	\$101,725
Mason's bill	-	-	-	-	82,000
Carpenter	-	-	-	-	62,000
					<hr/> 245,725
Deduct	-	-	-	-	12,000
					<hr/> *213,725

I hope you will excuse me for delaying you so long in waiting an answer.

GILBERT CAMERON, for BUTLER & CO.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

MARCH 16, 1847.

GENTLEMEN: In answer to your circular, I would state that my estimates did *not* include furniture.

My estimates in detail were as follows:

Seneca rubble estimates.

For stone-cutting and dimension stone	-	-	-	\$71,000
Stone for face work	-	-	-	7,500
Mason's bill	-	-	-	61,000

* Apparent error in addition, inasmuch as \$245,725 — \$12,000 = \$233,725.

R. D. O.

Fire-proofing - - - - -	\$13,000
Carpenter's bill - - - - -	67,500
	<hr/>
	220,000
	<hr/>

For marble rubble face.

For stone-cutting and dimension-stone - - -	\$75,000
Marble rubble - - - - -	14,000
Mason - - - - -	61,000
Fire-proof - - - - -	12,000
Carpenter - - - - -	65,000
	<hr/>
	227,000
	<hr/>

For marble with ashlar face.

Stone-cutting and dimension - - - - -	\$75,000
Ashlar for face - - - - -	20,500
Mason - - - - -	57,500
Fire-proof - - - - -	12,000
Carpenter - - - - -	65,500
	<hr/>
	230,500
	<hr/>

Yours, with esteem,

T. M. NIVEN.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

After carefully examining the bids in detail, the messenger was requested to ask Mr. Niven into the committee room; and on being asked whether he was willing to make a contract at his estimate for stone-cutting alone, he (Mr. Niven) replied in the affirmative. The messenger was then requested to call Mr. Dixon; and on being asked whether he was willing to make a contract for the work *exclusive* of stone-cutting, he (Mr. Dixon) asked until to-morrow morning to give an answer.

He was requested to see Mr. Niven on the subject, so as to ascertain whether a contract could be made with them jointly, based on Mr. Niven's bid for stone-cutting, and James Dixon & Co.'s bid for mason and carpenter's work.

After conference in regard to the special provisions of the contract, the architect was requested to draw up a blank contract, and submit the same to the committee at their meeting to-morrow.

And, on motion, the committee adjourned.

TENTH MEETING—MARCH 18, 1847.

Present, Messrs. Seaton, Hough, and Owen.

On motion of the chairman, it was

Resolved, That the specifications be altered so as to require that both the principal stairways, as high as the museum floor, be of stone, with

iron balusters, bronzed ; and that a floor above the ceiling of the second story, fire-proofed, according to the plan proposed in the report made on the 15th instant by Mr. Hough, be added ; and that the tessellated floor of the museum be dispensed with ; and that Mr. Hough be a sub-committee to consult with the architect as to what minor alterations in the specifications can be made, so as, with the reduction effected by dispensing with the said tessellated floor of the museum, to meet the additional cost of said stairways and said fire-proof floor, without increasing the aggregate expense of the entire building.

Mr. Dixon, of the firm of James Dixon & Co., appeared, and informed the committee that he was not willing to take the mason's and carpenter's work separate from the stone-cutter's, as yesterday proposed to him. He also informed the committee that he had made an error in the addition of his bid for Seneca ashlar of \$2,500, so that the committee must consider that bid as amounting in the total to \$205,250, at which amount he stood ready to contract.

It appearing that the bids of James Dixon & Co. for the building were the lowest, to wit:

In Seneca ashlar	-	-	-	-	-	-	\$205,250
And in marble ashlar	-	-	-	-	-	-	228,500

And it further appearing to the committee that the ashlar finish of Seneca stone is more durable than the rubble finish:

The committee informed Mr. Dixon that his bid to complete the building in the Seneca freestone, ashlar finish, for the sum of two hundred and five thousand two hundred and fifty dollars, was accepted.

On motion of the chairman, it was

Resolved, That Mr. Hough and the architect be a sub-committee to prepare a blank contract, submit the same to James Dixon & Co., and after obtaining their assent to the same, present it to this committee for approval.

And, on motion, the committee adjourned.

ELEVENTH MEETING—MARCH 18, 1847, (5 o'clock, p. m.)

Present, Messrs. Owen and Hough,

On motion of Mr. Hough, it was

Resolved, That Mr. Owen address a letter to Mr. John P. C. Peter, accepting the offer of quarry-right made to the committee, in letter of Mr. Peter to Mr. Seaton dated 9th December last, and place the said letter in the hands of Mr. Dixon, to be forwarded to Mr. Peter.

And, on motion, the committee adjourned.

TWELFTH MEETING—MARCH 19, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman submitted to the committee a copy of the letter which, in accordance with a resolution passed yesterday, he addressed to Mr. John P. C. Peter, owner of the Bull run quarry, in Montgomery county, Maryland, and which he had last evening caused to be delivered to Mr. Dixon, as follows :

WASHINGTON, *March 18, 1847.*

SIR: I am requested by the building committee of the Smithsonian Institution to inform you, that they have to day decided upon the material for their building; that their choice is Seneca freestone from some one of your quarries, if sufficient suitable stone can be found in them—probably from that of Bull run; and that they accept your offer made to them in your letter of the 9th December last, addressed to Mr. Seaton, namely, to pay you twenty-five cents per perch for all stone intended for cut work, and twelve and a half cents for all calculated for hammered work.

I am, sir, your obedient servant,

ROBERT DALE OWEN,
Chairman Building Committee.

JOHN P. C. PETER, Esq.

On motion of Mr. Owen, it was

Resolved, That the resolution heretofore adopted, instructing Mr. Peter Gorman to obtain four perches of freestone from Seneca creek, be and the same is hereby rescinded.

On motion of Mr. Owen, it was

Resolved, That the resolution heretofore adopted, instructing Dr. Owen to make chemical analyses of the Maryland marbles, and particularly of those from Mr. Worthington's and Mr. Symington's quarries, be and the same is hereby rescinded.

On motion of Mr. Hough, it was

Resolved, That Mr. Owen be requested to write to Mr. McLane, president of the Baltimore and Ohio railroad, and to Mr. Howard, president of the Baltimore and Susquehanna railroad, and to inform them that although, for the sake of economy, the freestone of the upper Potomac has been selected as a building-material, the committee desire to express their sense of the prompt liberality with which the boards of these railroad companies had adopted the suggestion of the building committee in regard to reduction of the rates of transportation in favor of the institution, in case marble was selected.

And, on motion, the committee adjourned to meet at eight o'clock this evening.

THIRTEENTH MEETING—MARCH 19, 1847, (8 o'clock, p. m.)

Present, Messrs. Seaton, Hough, and Owen.

The contractors, Messrs. Dixon and Cameron, appeared; and the contract for the buildings of the institution, which had been prepared by the architect and revised by the committee, having been read to them, they expressed their assent to all its provisions, and declared themselves ready to execute the same.

Thereupon the Secretary of the institution, being present, represented to the committee that one of the Regents, now in the city, to wit: Professor A. D. Bache, requested to be allowed to examine the provisions of the contract before it was finally executed; but that Mr. Bache was at present too ill to read or examine it.

Upon this suggestion, the committee asked the contractors whether they were willing now to sign, leaving the signatures of the committee to be

added to-morrow, after Professor Bache should have had an opportunity to examine the contract.

And the contractors, assenting, signed the contract.

On motion of the chairman, it was

Resolved, That the architect and Dr. Owen proceed to-morrow to Seneca creek, for the purpose of examining the quarries in its vicinity, with the view of selecting the one from which it is expedient to derive the material with which to face the building; and that they present to this committee specimens of the exact tint and quality of freestone they may concur in recommending.

And, on motion, the committee adjourned.

FOURTEENTH MEETING—MARCH 20, 1847.

Present, Messrs. Seaton, Hough, and Owen.

The chairman stated to the committee that he had a conversation with Professor Bache and the Secretary of the institution, and, availing himself of suggestions made by them, had prepared an addendum to the contract; which he submitted, as follows:

“It is further understood and agreed by and between the parties to the above agreement, that if the Board of Regents should determine to make important alterations in the plan of building, or in the time of its execution, then, and in that case, the said party of the first part shall receive *pro rata*, according to the prices agreed in the foregoing contract, for work executed, and reasonable damages, if the nature of the case justly demands it. And in case of dispute or controversy in regard to the amount, then the party of the second part may select either the architect of the institution, or any other architect or architects, to arbitrate in the case, and his or their decision shall be final and conclusive in the premises.”

And, on motion, it was adopted and signed by the committee, with the understanding that it be submitted to the contractors for their signature. Thereupon the committee proceeded to the site belonging to the institution, and carefully examined the same, with reference to the exact position in which to place the building; but came to no final decision thereon.

And, on motion, the committee adjourned.

FIFTEENTH MEETING—MARCH 20, 1847, (5 o'clock.)

Present, Messrs. Seaton, Hough, and Owen.

Mr. Dixon appeared and signed the “addendum.” And the committee appended their signatures to the contract, thus completing the same, as follows:

Contract.

This agreement, made and concluded this nineteenth day of March, in the year of our Lord one thousand eight hundred and forty-seven, between James Dixon and Gilbert Cameron, party of the first part, and the Board of Regents of the Smithsonian Institution, by Robert Dale Owen, William W. Seaton, and William J. Hough, a committee of three of their number duly appointed for the purpose, and for and in behalf of the

said institution, and in accordance with the provision of the fifth section of the act of Congress establishing said institution, of the second part, witnesseth : That the said party of the first part, for their heirs, executors, administrators, and assigns, hereby covenant and agree to and with the said party of the second part, that for and in consideration of the sum of two hundred and five thousand two hundred and fifty dollars, to be paid to them by the said party of the second part, in the manner and at the times hereinafter specified, they will furnish all the materials of every description and perform all the work necessary to construct and completely finish, in the most full, substantial, and workmanlike manner, the whole of the carpenter work, stone-cutting, and mason work, and work connected therewith, for the building of the Smithsonian Institution, in each and all of its parts, including all of its appurtenances, said building being situated on the site for the building of said institution, in the city of Washington, and in a position designated by the said parties of the second part. And the said party of the first part hereby further covenant and agree, that the construction of the said building and its appurtenances shall be in every respect in accordance with the plans, specifications, and directions of James Renwick, junior, the architect of the said institution, all of which shall be considered as part of this contract; which said specifications are hereunto annexed. And the said parties of the first part hereby further covenant and agree that they will furnish materials of the best description, and that the work shall be performed in the most workmanlike and substantial manner.

And it is hereby agreed by the parties to this contract, that the work, during its progress, shall be subject to the inspection and decision of the said architect, who shall have, and is hereby granted, power to condemn and reject all materials and work which shall not, in his opinion, be in accordance with this contract; and the said parties of the first part hereby agree that they will take down all work and remove from the ground all materials which may be condemned by the said architect, at their own cost and expense, on pain of forfeiture of this contract, as hereinafter specified.

And it is hereby agreed by the parties to this contract, that the execution and completion of the building herein contracted for shall occupy a period of five years from the nineteenth day of March, in the year of our Lord one thousand eight hundred and forty-seven, and in such proportions thereof, in and during each year thereof, as the said party of the second part shall direct; and such work to be done at such times and seasons, and in such order, as the said architect shall direct; it being expressly understood that an amount of not more than forty-one thousand dollars shall be expended annually during the first four years of this agreement.

And it is hereby mutually agreed by the parties to this contract, that the parts composing the said building shall be erected in the following times and order, viz: the wings and connecting ranges within two years, and the remainder of the building within five years, from the first day of January, one thousand eight hundred and forty-seven.

And it is hereby further agreed by the said party of the first part, that they will perform all work embraced in this contract as above specified, agreed, and understood.

And it is hereby mutually agreed, covenanted, and understood by the parties to this contract, that, in order to prevent all disputes, the said above-

mentioned architect shall decide every question, controversy, or claim, which may or can arise during the execution of this contract from alterations in plan or in any other manner, and that his estimate and decision thereon shall be final and conclusive between the parties, who hereby mutually bind themselves each to the other, to submit to the said estimate and decision of said architect, in the sum of forty thousand dollars, which is to be forfeited and paid by the party who shall neglect or refuse to abide by and perform said estimate and decision to the other party to this contract.

And the said party of the second part hereby agree that they will pay the above-mentioned sum of two hundred and five thousand two hundred and fifty dollars (\$205,250) in gold and silver, or in treasury notes bearing six per cent. interest, at their par value, for the whole work, to the said party of the first part, in the manner and times following, to wit: every two months for all materials delivered and work executed according to the estimate and certificate of the aforesaid architect, reserving fifteen per cent. therefrom until the completion of the work; and that when the whole building and work shall be completed, and upon certificate of the aforesaid architect that it has been finished in every respect to his satisfaction, according to the terms of this contract, they will pay the balance which may then be due, including said fifteen per cent., and the interest that may have accrued on said fifteen per cent., at the rate of six per cent. per annum from the times of the several estimates.

And it is hereby agreed and covenanted, that if at any time the said parties of the first part shall, in the opinion of the aforesaid architect, have performed any of the work embraced in the contract in an unfaithful or improper manner, or shall have violated any of the provisions of this contract, or shall refuse to prosecute the work herein contracted for, that then, and in that case, the said architect shall give notice of the same in writing to the said parties of the second part, any two of whom may thereupon terminate this said contract by giving notice thereof in writing to the said party of the first part; and that thereupon this contract shall be deemed terminated, abandoned, and lawfully forfeited by the said party of the first part, and the said party of the second part may proceed to contract for the remainder of the work with any other party or parties, holding all the work done and materials delivered by the said party of the first part, and all the moneys due them therefor, as security for the remainder of the work; and also holding and binding the said party of the first part, their heirs, executors, administrators, assigns, and bondsmen, to make good any farther loss or damage which may accrue to the said party of the second part from such defalcation, forfeiture, and abandonment of the work by the said party of the first part.

And it is hereby further agreed and understood by the parties to this contract that the following alterations in the plans and specifications shall be made, and that the same shall be considered as part of this contract:

First. The building shall be faced, and all the cut-stone work dressed from the best Seneca freestone from the upper Potomac, to be taken from the Bull run quarry, or some other quarry in the neighborhood of Seneca creek, to be designated by the said parties of the second part, and free from all imperfections.

Second. That the building shall be faced with coursed ashlar of the above-mentioned freestone, in courses varying from ten to fifteen inches in height, and no two adjacent courses in the building to vary more than

one inch in height, brought to a joint not exceeding three-eighths ($\frac{3}{8}$) of an inch in the widest place when laid, taken out of wind; dressed full to the square on the beds; builds, and joints, with a narrow arris drawn around the face of each stone, and the face between the arris pointed off horizontally in a regular manner and at regular distances—say not more than two inches apart—averaging nine inches in thickness, with a proper proportion of bond stone to bind the face to the backing—say one in every $3\frac{1}{2}$ feet square; the clause in the mason's specification, commencing with "the face of the walls shall be strongly tied to the backing," being continued in full force and effect. The whole of the above ashlar to be set in the best manner, and pointed in the manner described in the mason's specification.

Third. That in place of the principal flights of the front and rear stairways, as specified in the carpenter's specification, cut-stone steps and platforms of such freestone as shall be selected by the architect, which shall be fine cut and rubbed, with handsome cast-iron newels and balusters, similar to the wooden ones described in the carpenter's specification, and well bronzed in the best manner, with a heavy moulded hand-rail of the best well-seasoned black walnut, shall be substituted. On the heads of each of the above cut-stone steps and platforms, Norman pateras, or flower ornaments, shall be cut by the contractor. The above stone steps shall be carried up as high as the level of the museum floor.

Fourth. That a floor of one and a quarter inch white pine plank, resting on beams of white pine 2×12 inches, set twenty inches from centres, shall be carried under the roofs of the whole building and towers; and that the floor beams shall be supported by 8×12 inch girders where necessary, and plastering of cement mortar two inches in thickness shall be laid over the top of all of the said above-mentioned floors.

Fifth. That in place of the iron timbers having brick arches and concrete between them, which are specified to be placed in the chemical lecture room, the students' working laboratory, and the rooms over it, wooden beams 3×12 inches, set 16 inches from centres, with a deafening of cement concrete four inches in thickness between them, resting on one and a quarter inch plank, firmly secured to the beams by $3 \times 1\frac{1}{2}$ inch strips, shall be substituted. The above beams shall be furred on the under side, with $2 \times 1\frac{1}{2}$ inch strips, set one foot from centres, and plastered three coats; the last coat shall be hard-finished.

Sixth. That in place of the iron columns in the larger lecture-room, wooden columns, nine inches square, which shall be furred, lathed, and stuccoed in the best manner, with reeds forming clustered columns with foliage caps, bases and plinths, shall be substituted.

Seventh. That in the place of the tessellated wooden floor of the museum, a floor of narrow clear Georgia yellow pine plank, not more than five inches wide, planed, tongued and grooved, laid in courses and blind-nailed in the best manner, shall be laid. The heads and sides of all the plank shall be planed after they are laid, so as to be perfectly true and even when finished.

Eighth. That on the eight corners of the fourth story of the higher central front tower, eight columns, one foot in diameter and of the height of the story, with foliage caps, bases, and plinths, shall be well and truly cut.

And it is hereby further covenanted and agreed by the said parties of

the first part, that they will not employ any sub-contractor who shall be objected to by the architect; and further, that the said architect shall have power to discharge any laborer, foreman, and sub-contractor, who may, in his opinion, be incompetent or unfaithful; and the said parties of the first part shall not further or again employ, directly or indirectly, any of the above-mentioned persons, on pain of forfeiture of this contract, as herein before specified. And the said parties to this contract hereby mutually agree, that in case of the absence of the said architect, or of his inability to act, that then, and in that case, his assistant or successor, to be appointed by the said party of the second part, shall be, and is hereby, invested with all the powers granted to the aforesaid architect, in this contract.

In witness whereof, the said party of the first part have hereunto set their hands and seals, and the said party of the second part hereunto subscribed their names, and affixed the seal of the Smithsonian Institution, the day and year first above written.

Signed, sealed, and delivered, in presence of

JAMES DIXON, [L. S.]
GILBERT CAMERON, [L. S.]

ROBERT DALE OWEN, }
WILLIAM J. HOUGH, } Committee.
W. W. SEATON, }

Addendum to the above contract.

It is further understood and agreed by and between the parties to the above agreement, that if the Board of Regents should determine to make important alterations in the plan of building, or in the time of its execution, then, and in that case, the said party of the first part shall receive *pro rata*, according to the prices agreed in the foregoing contract, for work executed, and reasonable damages, if the nature of the case justly demands it; and in case of dispute or controversy in regard to the amount, then the party of the second part may select either the architect of the institution, or any other architect or architects, to arbitrate in the case, and his or their decision shall be final and conclusive in the premises.

JAMES DIXON.
GILBERT CAMERON.

ROBERT DALE OWEN, }
WILLIAM J. HOUGH, } Committee.
W. W. SEATON, }

WASHINGTON CITY, D. C., *March* 19, 1847.

Specification of the masonry and materials for the Smithsonian Institution.

GENERAL DESCRIPTION OF BUILDING.

The building will consist of a centre, which will be 50 by 200 feet in the clear, inside. Two connecting ranges, 60 feet in length in the clear, inside, and averaging 47 feet broad in the clear, inside. An east wing,

45 by 75 feet in the clear, inside, with a vestibule and porch attached to it; and a west wing, 34 by 65 feet in the clear, inside, exclusive of the apsis or semicircular projection.

Towers.—There will be two central front towers, one central rear tower, a campanile or bell tower, a large octagonal and two smaller towers, with porches, vestibules, stair-halls, &c., attached to the centre.

The east wing, or chemical lecture-room, will have a bell tower, six chimneys, a vestibule and porch, attached to it; and the west wing will have a campanile tower, and apsis or semicircular end connected with it.

The central building will contain, in the first story, the principal central hall, and the library, with groined ceilings, and the principal lecture-room, with a panelled ceiling. The second story will contain the museum, also finished with a groined ceiling.

The larger central front tower will contain a furnace cellar in the basement. In the first story a librarian's room, and a room over it in a mezzanine story, all with groined ceilings. In the second story, a room connected with the museum, with a groined ceiling, and over it a room eight feet in height. Above the line of the roof of the main building it will contain four stories, completely finished.

The lower central front tower will be divided in the same manner below the line of the roof; and, above this line, will contain three completely finished stories. The spaces between the front towers, and between the central building and the front towers, will contain in the basement a cellar, connecting the coal cellars in the towers. In the first story the front vestibule, with a groined ceiling, and the front stair wells; and in the second story, a continuation of the museum, with groined ceilings, and the second flight of front stairs, with groined ceilings. Between the two towers the carriage porch will project, and shall have a groined ceiling.

The central rear tower will contain, in the basement, a furnace cellar; in the first story, the rear vestibule, and part of the rear stair hall; in the second story the Regents' room, and a room over the rear staircase hall, which will be connected with the museum, all having groined ceilings; and, in the third story, which will be divided internally into two stories, the lower one the Secretary's and the upper one a muniment room.

In the small octagonal tower connected with the central rear tower, will be a circular staircase and a fire-proof safe.

In the space between the central rear tower and the main building will be the remainder of the central rear stair hall; and over it a room connected with the gallery of the museum, all having groined ceilings.

The campanile tower will have a furnace cellar in the basement, and will be divided above the basement and below the roof of the main central building, into three stories, with groined ceilings communicating with the principal lecture-room and the museum. Above the line of the roof it will be divided into four stories, completely finished.

The larger octagonal tower will contain, in the basement, a furnace cellar; in the first story a circular stair, with a groined ceiling, connecting the gallery of the library with its ground floor; in the second story a similar circular stairway; and above the line of the roof of the central building two stories, completely finished.

The two smaller towers will contain elevators and ventilating flues.

The west connecting range will be finished in the basement eight feet high in the clear; above the basement it will be occupied with a cloister

and gallery of art; which latter will be divided by stone pillars, supporting a clerestory, into three aisles, with groined ceilings.

The west wing will be finished in the basement eight feet six inches high in the clear; the upper story will contain a gallery of art, with a groined ceiling. The tower attached to the west wing will be occupied by a staircase well, and other apartments, with groined ceilings where directed.

The east connecting range will be finished in the basement eight feet six inches high in the clear, and behind the cloister and above the basement it will be divided into two stories, each twelve feet high in the clear. The upper story will be lighted by openings in the parapet, which is not shown in the plans, but which will be three feet six inches high; both stories will be completely finished. The cloister will extend along the front of the wing, and will have a groined ceiling.

The basement of the west wing, and its vestibule, will be finished nine to ten feet high in the clear.

Above the basement it will contain the chemical lecture-room and its gallery, and the laboratory connected with it; which latter will be divided into two finished stories.

The vestibule will contain the stair hall, and all the above rooms will be finished with groined ceilings.

Excavation, levelling, and refilling.—The trench for the foundation walls of the central building shall be excavated to a depth of four feet six inches, and for the connecting ranges and wings to a depth of five feet six inches below the present surface of the ground, at the centre of the north side of the building.

The trench for the foundation walls of the principal central front towers and the central rear tower shall be excavated to a depth of eight feet (8 feet) below the above line; and for the campanile, octagonal, and all the lesser towers, to a depth of six feet (6 feet) below the above line.

The trenches for all the partition and interior walls, and for all the foundations under pillars, &c., shall be excavated to the same depth as those for the outside walls with which they are connected.

The earth between the wall trenches, in both wings, both connecting ranges, and the great lecture-room, shall be excavated to a depth of 5 feet below the same line under the whole building.

The earth between the foundation trenches of all the towers and the space on the north front between the central towers will be excavated to a depth of 6 inches less than the trenches of the walls.

All remaining excavation for areas, coal slides, cess-pools, sinks, &c., necessary to complete the building, to be performed by the contractor, and according to the direction of the architect.

Refilling.—A part of the earth thus excavated shall be thrown back into the trenches, (on the outside of the walls and inside, so far as may be directed,) after the walls are built. It shall be thrown in in layers, and well rammed, so as to prevent all settlement. The remainder of the earth shall be removed and levelled off in such places and in such manner as may be directed by architect.

Outside excavation.—All the excavation necessary to bring the present surface of the ground to a level with the top of the foundation wall at the building, and to slope it in every direction for drainage, for a width of 60 feet (sixty feet) from the building, in every direction, will be performed by the contractor.

Grubbing and clearing.—All the sod, roots, and in general all vegetable mould and perishable matter, shall be removed from the whole area covered by the building.

And, in general, all excavation, refilling, grubbing, and clearing, necessary to complete the building in every respect, will be performed by the contractor, in accordance with the directions of the architect.

Masonry in foundation—concrete.—Under all the walls of the building a foundation course of concrete masonry, which shall be made by mixing two parts of best hydraulic cement with one part of lime in paste, with eight parts of clean sharp sand, which shall be thoroughly mixed and well tempered, and nine parts of broken stone, not exceeding two and a half inches in diameter. The whole shall then be thoroughly mixed, and well tempered, and laid in courses of six inches, and shall be well rammed, when laid, with a heavy maul, so as to insure the perfect solidity of the whole mass.

The concrete shall be laid to the following dimensions, under the different parts of the building:

A.—Under the two central front towers twelve (12) feet wide on bottom, ten (10) feet wide on the top, and two (2) feet in thickness, under all the walls and buttresses.

B.—Under the central rear tower, and the campanile and octagonal towers, ten feet wide on the bottom, eight feet wide on top, and two feet in thickness, under all the walls and buttresses.

C.—Under all the remaining towers, eight feet wide on the bottom, six feet wide on the top, and one foot six inches in thickness.

D.—Under the walls and buttresses of the central building, six feet wide on the bottom, five feet wide on the top, and one foot in thickness.

E.—Under the connecting ranges and principal partition walls, four feet six inches wide on the bottom, three feet six inches wide on the top, and one foot in thickness.

F.—Under the wings, five feet wide on the bottom, four feet wide on top, and one foot in thickness.

G.—Under the piers supporting the clerestory columns of the gallery of art, six feet six inches square on the bottom, five feet square on the top, and two feet in thickness.

H.—Under all the remaining piers, for the columns of the library and the lecture-room, five feet square on the bottom, four feet square on the top, and one foot six inches in thickness.

Stone masonry in foundation.—The masonry of the foundation shall be laid of large, well shaped, gneiss building stone, of the best quality, with level beds and builds, laid in courses, with strong bond. The stones shall be of large size, not less than three feet in length; the beds shall be hammered true and even, and the joints brought close together. All the joints shall be filled completely with mortar and spauls, so as to leave no cavities which might endanger the stability of the walls, and the outside joints shall be well pointed.

The foundation shall be laid of the following dimensions of cross section, under the different portions of the building:

A.—Under the central front towers, 1st, a course nine feet wide and two feet thick; 2d, a course seven feet wide and two feet thick; 3d, a course five and a half feet wide and two feet thick.

B.—Under the central rear tower, and the campanile and octagonal

towers, 1st, a course of stone seven feet wide and two feet thick ; 2d, a course of stone five feet wide and two feet thick.

C.—Under all the remaining towers, 1st, a course of stone five feet wide and two feet thick ; 2d, a course of stone four feet wide and two feet thick.

D.—Under all the walls of central building, 1st, a course of stone four feet and a half wide and two feet thick ; 2d, a course of stone three feet eight inches wide and one and a half foot thick.

E.—Under the connecting ranges and principal partition walls, the foundation will be three feet six inches wide, and four feet six inches in height.

F.—Under the wings, 1st, a course four feet wide and two feet thick ; 2d, a course three feet six inches wide and two feet six inches thick.

G.—Under the piers supporting the clerestory of the gallery of art, a foundation of stone four feet square on the bottom, two feet six inches square on the top, and three feet in height.

H.—Under all the remaining piers, for the columns of library, lecture-room, &c., a foundation two feet square, and three feet six inches in thickness.

I.—Under all the remaining partition walls a course of long stone, three feet six inches in length, and not less than eight inches in thickness, will be laid.

Under all the porches and buttresses, the foundation will be of the same section and materials as the walls they are connected with, and they will be well bonded to them. All the remaining stone work necessary to complete the foundation, will be performed; arcs and coal slides will be built to all the openings to the furnace cellars, in the towers, and to the basement windows, of such dimensions as may be directed by the architect. The faces of the walls will be well hammer-dressed, and neatly pointed.

The mortar for all the above stone foundation walls shall consist of the best hydraulic lime and clean sharp sand, mixed in the best proportions, and thoroughly tempered.

Brick masonry in foundation.—Inverted arches, of the best hard brick, will be turned under all the openings of the foundation, of the thickness of the walls in which they are placed, and of such other dimensions as the architect shall direct. The arches will be laid in the most true and even manner, with very close joints, which will be well slated up, to prevent all settlement in the mortar.

Groined arches of the best hard brick, laid in the best manner, with close joints, the 7-key courses being grouted up and slated, will be turned under the two central front towers, and space between them, the central rear tower, the campanile and octagonal towers of the main building, and the tower of the west wing. The arches will be nine inches, or one brick thick, and will be backed over with spandrels and haunch walls, and the floors above them will be of best North river flag, axed smooth on the upper surface, and cut true and even in the joints.

Partition walls.—The main partition walls of the central building will be of stone, in the foundation as above described. The lesser partition walls, for the rooms in the connecting ranges and wings, will be laid up of the best hard brick, and of the following section: 1st, a course of bricks 4 1/2 inches wide, 5 inches high; 2d, a course of bricks 4 1/4 inches wide, 5

inches high; and for the remainder of the height, or nine feet, they will be nine inches in thickness, and of the lengths shown on plans.

All the above brick masonry shall be laid with the closest possible joints, especially in the arches, which shall be slated in the joints, and all the bricks shall be well wet before they are laid. Proper openings for doors, with semicircular arched heads turned over them, shall be built in the walls, in the places shown on the plans, and where the architect shall direct.

Arches of brick, of such dimensions as the architect shall direct, will be turned behind all the stone arches of the windows and doors.

The mortar for all the above brick masonry shall be composed of best hydraulic or ground lime, or a mixture of hydraulic cement and lime in paste, mixed with the best clean sharp sand, and thoroughly tempered.

All the remaining stone and brick masonry necessary to complete the foundation to be performed by builder, whether specified or not.

WALLS OF BUILDING ABOVE FOUNDATION.

Stone masonry.—The walls shall be faced with the best broken rubble masonry, of white marble, or buff-colored Seneca stone of even color and best description, or of granite similar to that in the rear of the General Post Office; and the contractor will state in his estimate the expense of constructing the building with each of the three above described materials. The face of the stone shall be brought to the square by the mason's hammer, care being taken to pick, as far as possible, such stones for the face as will require little dressing; the object being to preserve, as far as practicable, the natural face of the stone, with the crystals unbroken. The beds, joints, and builds of the stone shall be dressed true and even, so that the joints shall not exceed one-half of an inch in the widest place. The style of the front shall be either broken or angular rubble, and the face shall be laid in the manner directed by the architect. The facing shall average ten inches in thickness, and no stone will be allowed in the work whose breadth of bed is less than two-thirds its height. The stone shall be of nearly uniform color, free from all sap, iron pyrites, and all other discoloring or deteriorating material, and especially in the white marble, from the decomposing carbonate of magnesia.

The face of the wall shall be strongly tied to the backing by headers of the same material as the face, running in places through the wall, and in no case less than twenty inches in depth, and furnished in such numbers as the architect shall direct—say one in every three feet six inches square. All the arses of the buttresses, towers, &c., and all the corners, splays, and angles, throughout the whole building, shall be dressed with the chisel so as to be perfectly plumb, true, and even, when laid. No quakers will be allowed in any part of the work. All the stones shall be laid on their natural beds. The heading stones on the corners of all the towers, buttresses, and of the whole building, shall have beds at least equal to their heights on face. The joints shall be pointed with a mixture of the best quicklime and blacksmith's scales and sand, and shall be smooth struck on the face; and, after it has set throughout, the joints shall be painted to the color of the face with the best pure white lead and boiled linseed oil, colored to the color of the stone. All the walls will be backed in with best

blue gneiss, of good shape and size, laid on the natural bed, and well bonded to the face work. Behind the outside walls, and at a distance of four inches from them, a five-inch brick wall, tied to the outer wall by at least one bond stone in every three feet square, will be laid. This backing will be returned, to meet the front wall at all the jambs and arches of all the windows and doors. It will also be tied to the front walls, in the piers between the windows, by brick cross walls nine inches thick, to form the flues; which flues will be constructed as follows: In each of the piers between the windows there will be three flues 8 by 16 inches in the clear inside, which will be carried from a point three feet below the under side of the beams of the first story to the top of the building. One of these flues will be connected with the furnaces by a horizontal flue of galvanized iron, or double-cross tin, two feet square, which will be furnished by the contractor, for the purpose of diffusing the hot air throughout the building. All these flues will have neat registers in the rooms, for the proper regulation of the heat. The second flue will have an opening in each story, on the line of the ceiling, on the outside of the wall, and another opening into the bases of the rooms inside: these will admit the cold air from the outside of the building into the respective rooms for the purpose of proper ventilation, and will be closed up on the level of the floor of each story, by a cross wall over the outside opening; and each of the above flues will be furnished with a heavy sheet-tin slide valve, with proper fixtures for opening and shutting, placed in such part of the flue, and made in such manner, as may be directed by the architect.

The third flues will have openings on the inside on a line with the ceilings of all the rooms; through these the foul and heated air will be carried off and discharged by an opening under the coping of the building. All these flues will be furnished with two sheet-tin valves each, made and placed in the manner directed by the architect. Proper flues, well purged, will be carried up for the furnaces, fireplaces, engine, laboratory, &c., in such places as may be directed by the architect.

In addition to the above ventilating flues, openings with valves will be formed in all the groined ceilings, which will be connected with the corner towers and flues in the larger towers.

Thickness of walls.—The thickness of the walls of the main building above the water tables will be two feet six inches in the first story, and two feet in the second story, exclusive of all projections of the buttresses, corbel courses, battlements, bands, &c.

The thickness of the end walls of the main building will be two feet six inches for a height of fifteen feet above the line of the water table and for the remaining portion two feet, exclusive of all projections.

The thickness of the walls of the connecting ranges above water table will be twenty-two inches, exclusive of all projections.

The thickness of the clerestory wall of the west range will be sixteen inches, and it will be backed in with good hard brick.

The thickness of the walls of both wings will, above the water table, be two feet, exclusive of all projections and the batter at the base of the east wing.

The thickness of the walls of central front towers will be three feet six inches in the first stories, three feet in the second story, two feet six inches in the third story, with the corners filled in to aid in supporting the

octagon, and two feet in the fourth story, which will be backed in with good hard brick, exclusive of all projections.

The thickness of the walls of the central rear tower will be three feet in the first story, two feet six inches in the second story, and two feet in the third story, exclusive of all projections.

The thickness of the walls of the campanile, exclusive of all projections, will be two feet to the line of the roof of the main building, and above this line twenty inches, and backed in with best hard brick.

The thickness of the walls of the octagonal tower will be two feet three inches to the line of the roof, and twenty inches above the line of the roof, and backed in with brick, exclusive of the batter at the base and all projections.

The thickness of the walls of the remaining towers will be two feet on an average, exclusive of all projections, and the stories above the roofs will be backed in with brick.

All the remaining walls, if any, to be in no case less than two feet thick, and to be executed by the contractor.

All the thicknesses above given are exclusive of the brick lining wall.

Brick masonry.—All the partition walls which rise above the basement will be two bricks—say 18 inches in thickness—to the height of the floor of the second story, and one and a half brick—say 14 inches in thickness—from thence to the under side of the rafters of the roof. Arches for doors and windows will be turned, of such sizes and in such places as may be directed by the architect.

All the interior arches behind the window arches, door arches, &c., will be turned in such manner as architect shall direct, to the form of Norman jambs, to receive the plaster of the jambs. Timber arches of brick, nine inches thick, will be turned for all the hot-air and furnace flues in all the floors.

The arches over the pillars supporting the clerestory of the gallery of art, in the west connecting range, will be of best hard brick, laid to such form as the architect shall direct, and over them a brick wall eighteen inches thick will be carried up to the level of the under side of the roof of the side aisles.

Groined arches of brick, eight inches thick, will be turned in the most perfect manner for the ceilings of the mezzanine and upper story of the porter's apartments, which will be situated in the lower central front tower; they will be filled in with spandrels and haunch walls, supporting flag floors of North river flag. If preferred by the contractor, the iron beams, with brick arches between them, hereinafter described, may be used in place of the above groined arches.

All the remaining brick-work necessary to complete the building to be performed by the contractor, whether specified or not.

Cut-stone masonry.—All the cut-stone masonry, of every description, which will be found in the specification of the stone and cutting, will be set by the mason in the most true, perfect, and substantial manner; and all the iron dowels, clamps, anchors, rods, &c., necessary to secure and render perfect the stone work, will be furnished by the mason; and the joints of the cut-stone masonry will be pointed in the same manner as above described for the face of building.

Mortar.—All the mortar for all the above brick, stone, and cut-stone masonry, to be composed of the best hydraulic or ground lime, or of a

mixture of hydraulic cement and lime in paste, in such proportions as architect shall direct, mixed with clean sharp sand, in the best proportions and thoroughly tempered.

All the bricks will be well wet before they are used.

All the stones will be laid on their natural beds, and thoroughly cleaned from dust or dirt before they are laid, and wet, if so directed by the architect.

Lathing and plastering.—All the ceilings and walls, and stud partition walls, of every part of the building, will be lathed to the forms laid down on the plans, or as directed by the architect, with the best sawed laths, five nails to each lath.

All the walls and ceilings of all the rooms in the basement story will be plastered with a scratch coat, brown coat, and hard finished coat, laid on true and even, and finished in the best manner.

All the walls and ceilings of the professors' rooms, laboratories, and rooms in the towers, to their tops, except such as are groined, will be plastered in a similar manner, with three coats.

All the canopies and partitions in lecture-rooms to be plastered three coats, as above described.

All the remaining halls and apartments in the whole building, including library, museum, the two lecture-rooms, the two galleries of art, the great central hall and its vestibules, the Regents' room, the front and rear stair halls and the rooms in the two central front towers, the octagonal and campanile towers below the line of the roof of the main building, will be plastered throughout with two coats, a scratch coat and a stucco-finished brown coat, well hand floated, laid on in the most perfect, true, and even manner. The brown coat will be laid off in courses and colored to represent stone.

Ornamental plastering.—All the ceilings of the museum, library, galleries of art, and the rooms connected with them, will be groined and ribbed in the best manner, according to the plans and directions of the architect. The ribs will be run at the intersection of all the groins, and across the ceilings between the groins, against the walls over the windows, and in all places which the architect shall direct; all the red lines on the plans being ribs. The ribs shall be of rich Norman section, and of good proportion, varying from 7 by 9 to 11 by 13 inches in the ceilings, and of larger dimensions in the arches over the columns dividing the aisles. In the gallery of art, heavy ribs, twenty inches wide, shall be run under the arches supporting the clerestory.

At the intersection of all the ribs, and at the crown of all the ribs not intersected by others, bosses of foliage, of the best Norman design, which will be furnished by the architect, and of the richest character, well relieved from the grounds, will be placed.

The shafts of all the columns of all the apartments and halls, which shall be of the richest character, composed of clusters of engaged columns in rebates, and made according to the plans of the architect, will be run with gaged mortar, in the best, truest, and most workmanlike manner; and all the separate columns of each clustered shaft shall have moulded plinths, and bases, and foliage Norman caps, of such design as architect shall furnish, and put up and modelled according to his directions.

Around all the windows a handsome moulded Norman jamb and arch, whose section shall be a double rebate, with two engaged columns, shall be run. All the columns of the above to have plinths, and bases, and

foliage Norman caps; and a label mould, resting on two foliage corbels, will be run around the arch of each window; and all the above work shall be executed according to the plans and directions of the architect.

Around all the doors, Norman jambs and arches, of the same section as those of the windows, but with more mouldings, where directed, shall be run. In the arches the mouldings will be ornamented with chevrons, cable moulds, and foliage bands, according to the directions of the architect.

The main central hall, the entrance porch, the rooms in the central front towers, the Regents' room, the rooms and stair wells in the octagonal and campanile towers, and the ceilings of the principal staircase, halls, and vestibules, and vestibule and porch ceilings of the east wing, together with the room over the central front and rear stair halls, and the ceilings of both of the wings, will be also groined and ribbed in the best manner, and finished, in every respect, as above described for the museum, &c. All the doors and windows will be finished as above described.

The ceilings of both the cloisters will be groined in a similar manner.

All the columns, &c., in all the above rooms, will be finished as above described; and there will be in all the rooms of the whole building clustered columns in the centre of the piers between the windows, with plinths, bases, and foliage caps.

The Regents' room will be finished all around with clustered columns and arches, dividing the walls into panels above the wainscoting. All the arches over these columns, and those of the triple arched opening between the room and the bay window, will be ornamented with zigzag, cable, and other Norman mouldings, as may be directed by the architect. All the doors and windows of all the above rooms to have mouldings, pillars, &c., as above described for the museum, &c.

The main ceilings of the principal lecture-room, and the gallery ceilings of the principal lecture-room, and of that in the east wing, will be level, and will be heavily panelled with rich ribs, having foliage bosses at their intersections. All the columns, and half columns, in the centre of the piers between the windows, all the window and door jambs and arches of the above rooms, to be of the form and workmanship hereinbefore described.

All the columns, window jambs and arches, door jambs and arches, ribs, &c., of all the above described rooms and halls, to be laid off in courses to represent stone.

All the remaining plaster work, both plain and ornamental, necessary to complete the building, will be performed by the contractor, whether specified or not.

The mortar will be made of the best Potomac or Thomaston finishing lime, and clean sharp sand, mixed in the best proportions, and thoroughly tempered. The plaster for the hard finish and gaged mortar to be of the best quality.

All the arres, angles, ribs, pillars, &c., to be kept perfectly plumb, true, and even.

Coloring of walls.—All the walls which are not hard finished will be colored by a mixture of lime-water and white, green, and blue vitriol, as may be directed; with which, such colors as the architect shall direct shall be mixed.

The coloring shall be put on in two to three coats, and the last coat

shall be colored different shades on the different parts of the walls, ceilings, &c.

Deafening.—All the floors which are not formed on groined ceilings, or on iron beams with brick arches between them, will be deafened with a mixture of lime, clay, and sand mortar, laid on of such thickness as the architect shall direct.

Iron work.—All the copings, cornices, battlements, window jambs and mullions, sills, chimney caps, and in general all the stone work, &c., will be tied together with strong wrought iron clamps, anchors, dowels and rods, well leaded to the stone work, and of such dimensions as may be directed by the architect.

Wrought iron bars $\frac{3}{4}$ -inch in diameter, and of the widths of the different windows to the outside of the jambs, will be used where directed, to tie the centre mullions to the jambs, especially in the octagonal story of the large central tower, and in the greater and lesser octagonal, and the small square towers of the central building.

A bar of $\frac{3}{4}$ by 2 inch wrought iron will be carried all around both stories of the larger octagonal tower, and around the smaller octagonal, and the small square towers of the central building, on a level with the spring line of the arches of the windows.

Gratings, of $\frac{3}{4}$ by $1\frac{1}{2}$ inch wrought iron, will be furnished for the areas of the different towers.

Lightning rods.—Five lightning rods, of wrought iron, one and a half inch in diameter, will be furnished by the mason. They will be furnished with elbows, glass thimbles, and platina points, of the best description, and will be put up in the following places: one on the great central front tower, one on the campanile tower, one on the octagonal tower, one on the tower of the west wing, and one on the tower of the chemical wing; and they will be carried ten feet above the tops of the towers to which they are attached.

Flagging.—The floors of the basement, of the chemical or east wing, and its vestibule, and the east connecting range, shall be flagged with the best North river flag, laid perfectly level, true, and even, and dressed in the joints, and laid in at least 12 inches of clean sharp sand and gravel, with at least six sesh-pools, four feet in diameter and six feet deep, under each of the above parts of the building.

The cellars under the front towers, and the space between them, as well as those of the central, rear, campanile, octagonal, and tower of the west wing, will be similarly flagged.

After the flag are laid, the joints will be grouted with a mixture of cement and sand.

The floors of the two cloisters will be flagged with best North river flag, axed perfectly smooth on the upper surface, and the stones will be of equal size from two to three feet square, and laid diamond-wise in cement-mortar.

The floors of the two galleries of art, in the western wing and western connecting range, will be flagged with the best North river flag, axed perfectly smooth, and cut to the form of octagons, of equal size, not more than two feet in diameter. The squares between the octagons will be filled with tiles of white marble or of red Seneca stone, as may be directed by architect, and this will be laid in best cement and sand-mortar.

The floors of the vestibules and central hall will be flagged with the octagon and square as above.

All the joints of all the above flagging will be cut perfectly true, and the tiles will be bedded on the best cement and sand-mortar.

The floors of the rooms over the groined arches, in the central front towers, will be flagged with best North river flag, as above described for the cellars themselves, laid in the best cement and sand-mortar.

Fire-proofing.—The floor of the chemical lecture-room, which occupies the whole east wing, and the floors of the students' working laboratory, and the room above it in the east connecting range, each of which is 38 by 24 feet in the clear, will be rendered fire-proof in the following manner. Cast iron beams of the shape of the letter T reversed, whose vertical arm will be 15 inches in depth, by $1\frac{1}{4}$ inch in width, with a bead on the upper end $2\frac{1}{2}$ inches in diameter, and whose horizontal arm will be eight inches long, and average $1\frac{1}{2}$ inch in thickness, will be laid four feet from centres; the ends of these beams will run nine inches into the walls, and will rest on a cast iron plate, 3 inches wide by 1 inch in depth, which will be firmly anchored to the walls; between these beams, arches of brick five inches in depth will be turned to form the floors. The spandrels over the arches will be filled in with a mixture of lime, sand, and broken stone or gravel, over which a flooring of best North river flag, well axed on the upper face, and not more than two inches thick, will be laid in the best cement and sand-mortar.

The floors of the rooms over the janitors' room and of the two rooms in the towers, on a level with the museum, making in all four floors 16 feet square, (exclusive of those over the groined arches in the cellars of the front towers,) will be similarly fire-proofed, unless they are groined with brick as hereinbefore specified.

The floor of the principal lecture-room will be tiled with best North river flag, laid on brick cross-walls, and well jointed and bedded in cement and sand-mortar.

A border of colored marble tiles four inches square, laid on bricks, in cement or plaster of Paris, will be carried around the Regents' room, three feet in width.

Safe.—A fire-proof safe will be constructed in the small octagonal tower, attached to the rear tower, with double wrought-iron doors, and iron shelves and hollow brick casings, per directions of architect.

A mantelpiece of red marble, or of such color as the architect shall direct, and of the richest Norman pattern, having two columns on each side, whose shafts will be a cable-mould and chevron, with plinths and moulded bases, and foliage caps of the richest character; over the columns a rich frieze, which will be ornamented by a band of Norman foliage, will be carried, and over this a label mould filled with pateras or rosettes. Upon this mould the shelf will be laid, which will be at least three inches thick, and moulded in the front and ends. All the remaining parts of the chimney will be completely finished in the best manner. The sides and back of the fireplace will be laid up of best fire-brick, laid herring-bone fashion.

Dry walls of stone.—There will be four sinks or sess-pools, eight feet in diameter and twelve feet deep, walled up in the best manner, with dry stone, and placed in such positions as the architect shall direct.

Twenty-four sess-pools, four feet in diameter and six feet deep, walled up with dry stone, will be built under the different floors of the building.

All the remaining mason work of every description, necessary to complete the whole building in the most perfect manner, will be performed by the contractor.

As it is the intention of the above specification, with the plans, to cover the entire and perfect completion of the work, no charge for extra work will be allowed the contractor, unless caused by actual alterations of the plans. And the contractor will be bound by the sum of ten thousand dollars, to abide by the decision of the architect, whose decision in all matters relating to the form, dimensions, and finish of all the parts of the work, shall be final and conclusive.

J. RENWICK, Jr., *Architect.*

[NOTE.—Contractors will also estimate the difference in expense between facing the building with rubble masonry, as hereinbefore specified, or of setting the whole face with ashlar, varying in height of course from ten to fourteen inches, and averaging eight inches in thickness, the ashlar being furnished by the stonecutter.]

Specification of the stone and cutting for the Smithsonian Institution.

GENERAL DESCRIPTION OF STONE.

The contractors will estimate on furnishing all the stone necessary for the cutting and the expense of the cutting itself, and will furnish three separate estimates of the above, based on white marble, buff colored sandstone of the best quality and uniform color, from the upper Potomac, and granite of the same color and quality as that in the rear of the General Post Office of the United States.

CUTTING.

North front porch—Will consist of three arched openings of the dimensions shown on plans, in courses not exceeding 15 nor less than 12 inches rise. The jambs will each contain four rebates, filled each with a $\frac{3}{4}$ column on the exterior face, and one rebate, filled in like manner, on the interior face. [See plan A, drawings No. 1.] All the columns will have handsome moulded Norman plinths and bases and foliage caps. The arches of each side will contain a similar number of mouldings to the jambs, and each arch will be ornamented with a zigzag, battlement, and cable, or other ornamented mouldings.

The buttresses will be cut of similar courses to the doors, and bush-hammered on the face, with moulded caps and a double water table. Between the buttresses on all three sides a corbel course handsomely cut, and eight to twelve inches projection of semicircular arches, resting on foliage brackets, will be carried; and over the corbel course a label mould supporting the battlement. The battlement will be well cut to the section shown in No. 2, plan A. All the face work of the porch will be cut both inside and outside.

Front door.—Between the central front towers and under the porch a door, of the dimensions shown on the plans, will be placed. The jambs

will consist of three rebates with $\frac{3}{4}$ columns, bases and caps, cut as above, and the arch will contain three mouldings, one of which will be ornamented with a zigzag or cable mould.

Sills and steps.—The sill of the door will be made in three heights of eight inches each, to form steps to rise from the ground to the first floor.

The window and niches over front door will have jambs of a single rebate, with a $\frac{3}{4}$ column, with moulded plinths, bases and foliage caps. In the arches the columns will be replaced by an octagon, and an octagonal label mould resting on four corbels will be carried over the heads of the three openings, for section of windows. (See plan A, No. 3.) Sills will be 10 inches in height.

Circular window will be of the diameter shown on plan. The section of the jamb will be as shown on plan A, No. 4, and the tracery will be per plans and direction of architect, the mullions not being less than six inches diameter, with moulded caps, plinths and bases, and the arches being splayed on both sides, and handsomely foiled; the foil in centre to be sunk through.

The moulding under the circular window will be a hook label, of size shown on plans.

If so directed, the circular window shall have tracery similar to the one in the west end of the centre building.

Under the interlaced arches of the battlement, another label mould, eight to twelve inches high, will run. The interlaced arches will be 18 inches higher than shown in plan, and will be sunk through. The pillars will be octagonal, with plain plinths, bases and caps, supporting the arches, and over the arches a neat hook label of proper size will be run. Niches or windows in pediment. Three niches, (or if so directed, windows,) with a splay and column jamb and arch, (plan A, No. 5,) will be cut for the pediment. Their sills seven inches high.

A corbel course will be carried up the pediment, of semicircular corbels, resting on neat brackets, and projecting eight inches from face of wall. The cornice or coping will be 12 inches by 28 inches, cut to the form of three sides of an octagon, and on the apex of the gable a handsome finial will be cut the size shown on plan, and of approved design.

Two base courses or water tables will be carried around the whole building, with the exception of the east wing. They will be cut to the dimensions and section directed by the architect.

Central front towers.—On all the corners of all the buttresses, which will be of rubble masonry, an arris two inches wide each way will be cut, so as to enable the stones to be set perfectly vertical, plumb, true, and even.

Buttress caps.—All the buttress caps to be of cut stone, handsomely moulded and finely cut, per directions of architect.

The 1st row of corbels under zigzag mould will be of good design, eight on each side of each tower, well moulded and cut with foliage and heads.

An enriched lozenge or zigzag mould will be cut of dimensions shown on plans, sunk six inches between the panels, and of such pattern as the architect shall direct, and cut in the best manner.

Sills of 1st tier of windows, and niches, and sill course.—Over the zigzag an octagonal sill course six inches high will be carried. Sills of windows will be 10 inches high. Jambs of 1st tier of windows will consist of a splay and column, (see plan A, No. 7.) Arches of splay and octagon,

(see plan A, No. 8.) A label resting on corbels will be carried around the heads of the windows and niches. The mullions will be cut to the form of a double jamb, with a fillet between them, (as shown in Nos. 8 and 9.)

The bases, plinths, and capitals, will be furnished for all the columns of such design as architect shall direct, and they shall have foliage caps well undercut.

In the arches the column will be replaced by a square with a beed on the angle, or by an octagonal mould, (see plan No. 9,) and the remainder of the arch shall be the same as the section of the jamb.

Corbel courses over the 1st tier of windows.—A handsome corbel course, with moulded corbels under the arches, shall run all around both towers, (see Nos. 10 and 11,) and project from six to eight inches; a moulding shall run over the head of the corbel course, with a batter on top to shed the rain.

Between the corbel course and the band under the 2d windows a panel course, well sunk, (see plan A, No. 12,) will be carried around both towers, of such design as architect shall direct.

The sill course under the second windows will be a semicircle and fillet, and five sides of an octagon, of the height shown on plan, and finley cut.

The sills of the 2d tier of windows will be 15 inches in thickness.

The jambs, arches, labels, plinths, bases and caps, will be of the same section as those of the 1st tier; they will be finely patent-hammered or well cut, and of such dimensions as to section as the architect shall direct.

Corbels over 2d tier of windows.—On each side of each tower, nine or ten corbels or modellions of good design, handsomely moulded, will be placed, and of such size as architect shall direct. These corbels will support an octagonal moulding, well cut, and of such dimensions as architect shall direct.

The sill course of panelled arcade over this octagonal moulding, will be of such dimensions and section as architect shall direct.

A panelled arcade of seven to eight arches, supported by pillars, with plain caps and bases, will be carried along two sides of each tower—32 panels in all; they will be sunk of such depths as the architect shall direct.

Moulding over arcade and splayed sill course.—Over this arcade a label mould with a splayed sill course, having in it one break and being a continuation of the buttress caps, will be carried around three sides of each tower, of such dimensions and section as architect shall direct.

Above the sill course, the sills of the upper windows, which will be 15 inches high and of such section as architect shall direct, will be carried. They will be well cut.

Windows, 3d tier.—The third tier of windows will vary in the two towers per plans; there being a double window on each of the four sides of the larger tower, and a triple one on each of the four sides of the lower tower. The section of all the jambs will be as shown on plan A, Nos. 7 and 8, and they will be of such dimensions as the architect shall direct. All the columns of all the above jambs will have plinths and bases of good designs and foliage Norman caps, approved by architect. The arches will have the same section as the jambs, except over the pillar caps, where the circular shaft will be replaced by an octagonal moulding.

Finish of lower central front tower, above 3d tier of windows.—1st. A corbel course projecting 10 inches from the face of the wall, of semicircular corbels, supported on brackets, will be carried all around the four sides of

the tower. Over this an octagonal moulding; over this a zigzag or panelled moulding, of such dimensions, pattern, and workmanship as architect shall direct, well sunk; over this zigzag or panelled moulding, an octagonal moulding—then a vertical band; over this band a $\frac{3}{4}$ circle; and over this a cove, with an octagonal or splayed top for the cornice or coping.

All the above mouldings to run all round the four sides of the tower, and to be of such dimensions, workmanship, and design, as architect shall direct. The upper bed of the upper stone or coping will be at least 30 inches, with a groove sunk one inch all round, to secure the roofing material, to prevent all leakage.

Finish of larger front tower above the third tier of windows.—Four circular windows for clock faces, one on each side of the tower, of a diameter not exceeding nine feet, will be placed over each set of double windows. The jambs will be of the section shown on plan A, No. 14, and in the mouldings the numbers of the hours will be cut. The windows will be filled with handsome Norman tracery of pillars, and semi-circular arches of such dimensions, &c., as architect shall direct.

Splayed corners.—Above these circular windows the tower changes the form of its ground plan from that of a square to that of an octagon, by means of four splayed corners, (per plans;) these corners will be of coursed cut stone, well cut on the beds, builds and faces, 12 inches high in each course, and having a drip mould cut on the under side of each stone to prevent the water from getting into the joints.

An octagonal moulding will be carried all around the base of the octagon at the point where the splay ceases. This moulding will be fine cut, and not less than 12 nor more than 16 inches in height.

Pinnacles.—An octagonal moulding of similar dimensions to the one above will be carried all around the top of the 16 buttresses of the principal tower; and on each of the buttresses an octagonal or cross-shaped pinnacle, having a plinth, pillars with caps, bases, and arches, and mouldings. Arched panels, corbels, and mouldings of such dimensions, design, and workmanship, as the architect shall direct. The pinnacles will be each capped by a single stone, having the form of an octagonal pyramid, of such dimensions as architect shall direct, surmounted by a handsome finial. All the above work to be cut in the best manner.

A sill course of octagonal form will be carried around the whole tower, under the sills of the fourth tier of windows, of such dimensions as architect shall direct. Sills of the windows of the octagonal section will be 15 inches in height, and of such depth as may be directed by architect.

All the windows of the octagonal section will have jambs of such section as architect shall direct, and detached columns not more than 12 inches lesser diameter, of oval form, will divide the windows into two bays.

The columns of the jambs and the central columns, or mullion, will have plinths and bases of good design, and ornamented Norman caps, of such dimensions and pattern as may be approved by architect. The splay of the jambs will be continued around the arches; the tracery of the window heads will be sunk through single stones of not less than nine inches in thickness: the arris of the arches will be splayed, and the quatrefoil over them will also be sunk through, and the whole will be fine cut, per directions of architect.

All the corners of the octagonal section of the tower will leave an arris

drawn on them, so that they will be perfectly plumb, true, and even, in every respect.

A corbel table will be carried around the octagon over the arches of the fourth tier of windows, per plans, with handsome brackets neatly moulded under semicircular arches, which will project from 10 to 12 inches.

Over this corbel table a splay fillet and octagonal moulding will be carried to the under side of the ornamental band, of such dimensions and workmanship as the architect shall direct.

Over this octagonal mould an ornamented course, having a zigzag chevron, or a star or enriched lozenge or triangular frette, of such dimensions and pattern as architect shall direct, and well cut, will be carried.

Above this a series of six mouldings, of such dimensions and pattern as the architect shall direct, and terminated by an octagonal moulding 16 inches high and 30 inches bed, for a cornice, with a rabbet to receive the lead connecting the roof covering with the stone, will be carried.

Parapet of tower.—A parapet 3 feet 6 inches in height, with a moulded base and octagonal coping, will be carried all around the top of the tower, over the cornice. All the stones between the base and coping will be 15 inches thickness of bed, and fine cut on both faces and both beds, as will the coping and base. The whole to be of such proportions as the architect shall direct.

The buttresses of both central front towers will have an arris or draught, fine cut, drawn on all the corners, so that they will, when laid, be perfectly plumb, true, and even.

All the mouldings, buttress caps, base courses, and in general all the ornamental work on the buttresses, will be well cut and of such dimensions and design as architect shall direct. And all the work on both front towers, the porch and space between the towers, to be cut and furnished, whether specified or not.

In each of the walls between front towers and main building, there will be a door four feet six inches opening, and ten feet six inches high in the clear. Their jambs and arches will be of the following section, (see plan A, No. 18,) and well cut, and the columns will have bases, plinths, and foliage. Capitals of such design as may be approved of by the architect. The bands and corbel courses, and battlements of the front of the central buildings, hereinafter described, will be continued along these walls to the rears of the central front towers, a total length of 14 feet each.

Windows.—In each of the above spaces there will be three windows, averaging ten feet high, and four feet broad in the openings, with arches and jambs of section (plan A, No. 17) well and truly cut, and of such dimensions as architect shall direct.

Cut stone in front and rear of central building.

Two bases, their courses of section described, will be carried around both of the fronts and buttresses.

Buttresses.—The corners of all the buttresses will be dressed with a draught or arris, so that they will be perfectly plumb, true, and even, when laid.

Buttress caps will be gable-shaped, and project one foot to sixteen inches from the corbel table behind them. They will be well and truly

cut, with a circular bead on the apex, and of such dimensions, &c., as architect shall direct.

Band under windows.—Under the first tier of windows a moulding, consisting of a splay, or cove, a fillet, and an octagonal moulding, of such dimensions as architect shall direct, will be carried.

The window-sills of the first tier of windows will be 10 inches high, well cut, with a rebate to receive the sash.

The jambs of the windows will be cut to the form of a splay and column, in a rebate, and of such dimensions as architect shall direct. All the columns to have plinths and bases, handsomely moulded, and foliage Norman caps of such design as architect shall approve.

The arches of the windows will be of the same section as the jambs, with the exception that the circular moulding, or shaft of column, will be replaced by an octagonal one.

Labels resting on ornamental corbels, of handsome design, will be carried over the heads of all these windows.

A corbel table of semicircular arches, supported on handsomely carved drops, will extend from buttress to buttress, along the whole front and rear. The projection of this corbel table will be from eight to ten inches.

The octagonal sill-course under the sills of the second tier of windows, will be cut to such dimensions as architect shall direct.

The sills of the second tier of windows will be from 16 to 18 inches in height, and cut per plans and directions of architect.

The window jambs will be cut to the form of a splay and octagonal, or oval column, in a rebate, of such dimensions as architect directs.

The columns in the centre will be of the same shape as those of the jambs, and of such dimensions as architect shall direct. All the above columns to have plinths, bases, and foliage capitals, of such design as architect shall direct.

The splay of the jamb will continue around the arch, and a handsomely moulded label, with two carved foliage corbels, will be carried around the arches. Tracery will be of the form shown on plans, at least nine inches thick, and moulded on all the edges. The space between the pointed arches of the tracery will be sunk two inches on both sides from the face of the arch, and a trefoil will be sunk through it, if so directed by architect.

A corbel course of large size, projecting from 15 to 18 inches from the face of the walls, will be run all along both front and rear; the corbels will have semicircular arches, supported by handsome moulded drops, and will be of such dimensions and design as architect shall approve.

Over the corbel table a moulding, consisting of a splay and fillet, will run all around, if so directed by architect. This moulding is not shown on plans.

Above this line the battlements will be carried along the whole front and rear of the building. The battlement will be well cut; and where it is above the roof, will be 16 inches in thickness, and cut on both sides. The coping of the battlement will be cut to the section shown in plan A, No. 16. and of such dimensions as architect shall direct, and the battlement shall be 18 inches higher than shown on plans.

All the remaining cut work, and stone therefor, necessary to finish completely the front and rear of the central building, will be furnished by the contractor, whether specified or not.

East end of central buildings.—The band under the windows will extend along the whole end of building, between the towers, and will be cut to the form of five sides of an octagon, of such dimensions as architect shall direct.

Buttress corners will have an arris drawn up them, as before described, for front and rear.

Triple window.—The triple window will have a sill 15 inches in height, and of such other dimensions as architect shall direct.

The jambs and intermediate jambs will be of the section shown on plan B, No. 1, and of such dimensions as architect shall direct.

All the columns in the jambs to have plinths and bases, and capitals, with Norman foliage. The arches will be of the same section as the jambs, with an octagonal moulding, taking the place of the shaft of the column. A label mould, of the form of five sides of an octagon, will be carried all around the heads of the three windows, from the level of the caps of the columns of the side windows, and four handsomely carved corbels will be carried on the level of these caps, from which the label will spring.

The smaller end windows will have sills, jambs, arches, bases, capitals, plinths, corbels, and labels, of the same section as the triple window.

Corbel course.—Along the whole end, and its gable, a handsome heavily-sunk corbel table, of semicircular arches, springing from handsomely-carved brackets or drops, will be carried. It will project from 12 to 15 inches from the face of the wall.

Coping.—An octagonal coping, at least 15 inches high and 30 inches to bed, will be carried along over the whole end wall, with a proper groove for roof covering, sunk in build.

West end of main building.—A sill course of octagonal form will extend along the whole end between the towers.

The arris of buttresses, and arched panels over them, will be dressed perfectly true and even.

Circular window.—The jamb will be cut to the section, (plan C, No. 1.) The tracery will be cut on both faces, with columns, with plinths, bases and caps, quatrefoils, six-foils, and trefoil, tracery heads and mouldings, of such design and dimensions as architect shall direct, and be complete in every respect.

A corbel course will be carried up the gable of the centre compartment, of such design, workmanship, and dimensions, as architect shall direct.

Two windows at sides of circular windows will be furnished with jambs, arches, &c., cut in same way as described for windows of east end.

The two small circular windows will have jambs of the section shown in plan C, No. 2.

The quatrefoil tracery will be eight inches thick, dressed on both sides, and splayed on edges.

A hook label mould will be carried along the whole end under the parapet.

The coping will be similar in every respect to that of east end. And all the above to be of such dimensions and workmanship as architect shall approve.

Towers of east end of main building.

CAMPANILE.

The campanile, a larger tower, will consist of four stories, or external divisions. The two base courses, hereinbefore described, will extend all around it.

The jambs of the doors will be cut to the section of two rebates, with one engaged column in one of them. And there will be four windows, (not seen on plan,) in the first story, with sills, splayed jambs and arches. A splayed water-table will be carried all around under the second story.

Second story.—On each side of the second story there will be two panels, with arched heads, formed by buttresses, which will project from six to eight inches from the face. The corners of the tower buttresses and arches will be dressed perfectly true and even, so as to be perfectly plumb, when laid.

Windows.—In each of the panels there will be three windows with splayed sills, jambs and arches.

Cornice of second story will consist of a splay, or an ogee, a wide band, and an octagonal moulding, all cut in the best manner.

If the architect shall so direct, the splay or ogee shall be replaced by corbels.

Third story.—A base course, with splayed top, will run all around the tower.

The eight windows of third story will have sills ten inches in height.

The jambs will consist of a splay and column in a rebate, and the mullions of a column on a pilaster.

The arches will be of the shape of a trefoil, of the same section as the jambs, and the tracery, with splayed angles and panels, will be carried from capital to capital of the columns, per plans and directions of architect. All the columns will have bases, capitals, and plinths, handsomely carved and moulded.

Over the windows a corbel course of ten corbels or modillions, on each side of the tower, will be carried; the corbels will be handsomely cut and moulded, (not shown on plan.)

Over the corbels an octagonal moulding will be carried, of such dimensions as architect shall direct.

Fourth story.—A splayed base course will be carried all around the fourth story of the tower.

The window-sills of the eight windows of the fourth story of the tower will be 10 inches high. The jambs and centre mullions will be cut to the same section as those of the third story.

The tracery will be eight inches thick, splayed on corners with a quatrefoil pierced through each tracery head over the arches.

Over the fourth story there will be, first, a moulding consisting of a splay and a fillet. Over this a zigzag or chevron mould, well sunk; over the chevron a fillet, and an ovolo supporting a corbel course of semicircular arches on plain brackets, projecting from eight to twelve inches from the face of the wall.

The coping of the tower will be octagonal, 12 inches high by 24 inches bed, and grooved to receive the roof covering.

All the parts of the above tower, including doors, buttresses, bands,

corbels, mouldings, windows, &c., to be of the dimensions, workmanship, and design furnished by architect.

Smaller tower of east end.—Base courses to be carried all around.

The tower will consist of three stories externally; the lower one being square, and the two upper ones octagonal.

First story.—A sloping base, eight inches high, will extend along the bottom of the panel, between the buttresses on each side.

The sides of the first story will each have a panel with circular head, formed by buttresses and arches, projecting six inches from the face of the wall, and all the angles of the tower and buttresses will be dressed perfectly true and even.

Windows.—On each side of the first story there will be two windows, with splayed sills, jambs, and arches, which will be well and truly cut.

An octagonal moulding will be carried around over the top of the first story.

Spays.—The square of the first story will be gradually drawn into an octagonal form by four splayed corners, which will be of cut stone, with drips on under side, of same character and workmanship as described for the main central tower.

Windows of the second story will have sunk jambs and arches, cut perfectly true and even.

A hook label moulding will be carried around the top of the second story of the tower. The parapet or broad band over this story will be of cut stone. A splayed coping will be carried over the parapet and under the third story.

An octagonal sill course will be carried around the tower under the window-sills of the third story.

The window-sills of the third story will be eight (8) inches in height.

The jambs and arches of the windows will be splayed, or of the section of a rebate, with an engaged column; all the corners of the tower will be cut perfectly true and even.

A corbel course will be carried around the tower, forming the first member of the cornice; it will be of semicircular arches, supported by plain brackets, and will project eight inches from face of tower wall. Over this corbel cornice a splay moulding will be carried. And over the splay the cornice will consist of five members of such design and dimensions as architect shall direct. The top bed of the upper member or coping shall be two feet wide, with a groove cut to attach the roof covering.

All the parts of the above tower to be of such workmanship, dimensions, and design, as the architect shall direct.

Towers of west end of main building.—Octagonal tower of southwest corner will consist of four stories externally.

The two base courses will be carried around the first story. Above the base courses the first story will be battered, per plans, and all the corners will be dressed so as to be perfectly true and even. A splayed water table will finish the first story.

Second story.—All the corners will be dressed true and even, so as to be perfectly plumb, when laid.

Windows.—There will be two windows in each side with splayed sills, jambs, and arches.

Loop-holes.—There will also be one cross-shaped loop-hole in each side, sunk through the walls and cut perfectly true and even, with trefoils on the ends of the arms.

A hooked label mould will be carried around the tower, and well cut. The parapet of the first story, over the label, will be a broad band of cut stone, finished on top with a splayed coping.

Third story.—The base or sill course of the third story will be well cut and splayed on upper edge.

The windows of the third story will form a continuous arcade all around. The jambs and the centre mullions will be cut to section shown on plan D, No. 1.

All the columns will have plinth bases and foliage Norman caps. The section of the arch will be same as that of jamb, except that a square or octagonal moulding will take the place of the shaft of the column. The tracery will be eight to ten inches thick, the arches will be raised, and over them a quatrefoil pierced through the panel in the head of each tracery.

A corbel course of small moulded corbels, seven on each side of the tower, well cut, will be carried around under the cornice of the third story. The cornice of the third story will be octagonal and well cut. The whole story will be eighteen inches higher than shown on plan.

Fourth story.—The base course will have a splayed top mould or water table on which the widow sills will rest.

The window sills will be six inches high. The windows of the fourth story will also form a continuous arcade. The jambs will be cut to the section shown on plan D, No. 2, and the arches will be of trefoil form, and cut per directions of architect. All the columns will have plinths, caps, and bases of good design.

A hook label mould will be carried around under the parapet.

The parapet will contain two sunk panels on each side, each of which will be of handsome Norman patera, of such design as may be approved by architect. The parapet will be sixteen inches thick, and dressed on both sides, and will be coped by a coping twenty inches bed, cut to the section shown on plan D, No 3.

A balustrade of columns, with caps, bases, arches, &c., will fill the spaces between the jambs of the windows of fourth story, per end view.

The northwest corner tower will be divided externally into three stories.

The first story will be similar to that of the southeast corner tower.

The second story will be square with splayed corners, handsomely cut; it will rise from a splayed base mould, and have two windows with rebated jambs on each side. The cornice of the second story will be a hook label mould, over which will be a plain parapet, with splayed coping well cut.

Third story.—The base course will be well cut, with a splayed top.

Windows.—There will be four windows, with sills 10 inches high, well cut. The jambs and arches will be a splay and column in a rebate, with handsome plinths, caps, and bases. The centre mullion will be a column on a pilaster. The tracery will be eight inches thick, with raised arches, and a quatrefoil pierced through the panel in the head.

In the gables over the windows a sunk quatrefoil panel will be cut.

The coping will be a hook label mould, 13 inches bed, grooved as usual to receive the roof covering, and a neat finial will be cut for each gable.

Central rear tower.—The two base courses will be carried all around the buttresses, &c. All the corners of all the buttresses will have an arm

run along them. All the mouldings and buttress caps will be cut in the best manner, and of most approved design.

Door.—The door jambs will be of the section of four rebates, containing four detached shafts or engaged columns, having bases and plinths handsomely moulded, and capitals cut in the best manner, with Norman foliage, well sunk and undercut; (see plan D, No. 4)

The arch will have four Norman mouldings, two of which will be ornamented with a chevron and cable mould; (see plan D, No. 5.)

A label of octagonal form, and ornamented on the lower face with a Norman leaf, will be carried over the arch of the door, and will spring from two foliage corbels of best design and workmanship.

Bay window.—The bracket of the bay window, which will project not less than six feet six inches from the face of the wall, will consist of a series of mouldings rising from a large carved corbel. All the face work of the windows between the corbel and the sills will be well cut in both faces and both beds, to a thickness of 13 inches.

An octagonal sill course will be carried all around the tower on a level with the under side of the sills of the bay window. The window sills will be 10 inches high, cut in the best manner.

All the face work of the bay window above the sill course will be fine cut.

There will be three windows, one on each side of the bay. The jambs and mullions will be of the section shown on plan D, No. 6.

All the pillars will have plinths, bases, and foliage caps. The arches of the tracery will be raised, and a quatrefoil will be pierced through the sunk panel over them. The tracery will be nine inches thick. The arch of the window will be of same section as the jamb, except a square will take the place of the shaft of column. Over the windows a double label mould will be carried all around the bay window, and above this line there will be a battlement cut in the best manner, and of good design. The battlement will be cut on both sides.

Sides of first story of tower.—On each side of the small octagonal tower a window with splayed jambs, arches, and sills, will be cut, and two similar windows will be placed on the opposite side.

On each side of the octagonal tower in the second story a window with rebated jambs, having each an engaged column, will be cut in the best manner; and there will be two similar ones on the opposite side of tower, between which a niche, having a foliage corbel and canopy, cut in the best manner, will be placed.

A hock label mould of large size will be carried all around the top of the second story, and well cut.

Third story.—The base course of the third story will be splayed on upper bed, and well cut.

The front and rear will each contain a single large window, having a jamb with the section of a splay, and engaged column in a rebate, and a mullion or central column supporting tracery. The tracery arches will be raised, and a quatrefoil pierced through the sunk panel.

Over the arch of the window there will be an octagonal label resting on two handsome corbels, which will be well cut. All the columns to have bases, plinths, and foliage caps.

The sides of the third story will each be pierced by two windows, having splay and column in a rebate for the jambs and arches.

Battlements, &c.—The machiolations under the battlement will project two feet from the face of the wall, and will be formed of semicircular arches, springing from moulded corbels; above these will rise the battlement, well cut on both sides, 20 inches in thickness, and coped with a heavy moulded coping, (per plan of architect.)

The octagonal stair tower attached to the above will have cross-shaped loop holes and slits to light the stairs from top to bottom. All the mouldings of the main tower will be carried around it, and it will be finished at the top by a battlement with cross-shaped loop-holes. A door for entrance, with plain rebated jambs, will be placed in one side of this tower on the level of the ground, with proper sills, &c.; and all the corbels and other mouldings of the tower will be well cut.

East connecting range—cloister.—The front of the cloister will be a continuous arcade of six-arched openings filled with mullions and tracery. The section of the jambs and mullions will be as shown on plan A, No. 15.

All the columns will have plinths and bases handsomely moulded, and foliage capitals of best description.

The tracery in the heads will be nine inches in thickness, with raised arches, and the panels over these arches will be pierced with quatre-foils. An octagonal label resting on handsome corbels will be carried over the arches.

The cornice will consist of a corbel table of semicircular arches resting on moulded corbels, projecting at least 10 inches from the face of the wall. The coping will be octagonal, 18 inches bed, with grooves, &c., as usual. The arches of the cloister will rest on a sill 12 inches thick and 30 inches bed. Underneath the sills an octagonal moulding will be carried.

There will be six small windows with splayed jambs, one under each of the above arches, to light the basement, and two base courses, as usual.

North front of connecting range behind cloister will be finished with eight windows, with jambs and arches of section of a rebate with engaged column or a splay, and of same dimensions as those of the south side.

South front of connecting range will consist of seven bays, divided by buttresses projecting 8 to 12 inches from the walls.

The two base courses will be carried all around the buttresses and walls.

An octagonal sill course will be carried along under the windows. The sills of the windows will be six inches high. The section of the jambs and windows will be of a rebate and engaged column or a splay, with bases, plinths, and capitals to the columns. The arches will be of same section as the jambs, with an octagonal moulding instead of the shaft of the column. Over the heads of the windows an octagonal label mould rising from two moulded or foliage corbels will be run.

A corbel course, projecting from 10 to 12 inches from the face of the wall, will be carried from buttress to buttress. The corbels will consist of semicircular arches rising from moulded dentils. The coping will be octagonal.

A small window with splayed jambs, sills, and arches, will be cut for each compartment, and they will be placed underneath the windows above described.

Above the coping there will be a battlement three feet high, with openings for windows alternating with carved panels. This will be coped

with an octagonal coping of 18 inches bed, with a groove for the roofing material cut in it. This is not shown on plans.

East wing.—The basement of the east wing will be battered, per plans.

Windows.—There will be 14 windows in the basement, with splayed or rebated jambs, sills, and arches.

The basement will be coped with a water table 12 inches in height, splayed on the upper bed.

Windows front and rear of wing.—An octagonal sill course will extend along the front and rear under the window sills. The window sills will be nine inches high.

The jambs of the windows will be a splay and engaged column in a rebate, with a mullion, as hereinbefore described, and tracery in the head with raised arches and pierced quatrefoil, and an octagonal label mould will be carried around each arch, resting on two handsome corbels. The plinths and bases of the columns and foliage capitals will be well cut and moulded.

A porch, with four steps of 7 inches rise by 12 inches tread carried all around it, will serve for the east entrance to the wing. A water table with splayed top bed will extend all around the porch.

The door jamb will be cut to the section of a splay, and engaged column in a rebate, with plinths, bases, and foliage caps. The arch will be well cut, and a label will be carried around over the arch, resting on two handsome corbels.

The cornice will consist of 16 corbels or dentils, handsomely moulded, supporting a well cut parapet, surmounted by an octagonal coping of 16 inches bed.

The *vestibule* will have a water table similar to that of the porch carried round it; over the porch will be a window with a jamb of the section of a splay and engaged column in a rebate, with a centre mullion, tracery with raised arches and pierced quatrefoil, and an octagonal label mould resting on two corbels, all cut in the best manner, with plinths, bases, and capitals, as hereinbefore described. The window sill will be eight inches in height. On each of the sides of the vestibule will be a double window with splayed jambs, and arches, and sills. An octagonal label, resting on three plain corbels, will be run around the arches.

A corbel course, projecting from 8 to 10 inches from the face of the wall, will be carried all around the sides and gable of the vestibule. It will consist of semicircular arches resting on handsome moulded brackets. The cornice will be octagonal, 18 inches bed, and a handsome finial will be cut and placed on the apex of the gable.

East and west sides of east wing will be finished precisely alike, except where the west side is covered by the connecting range, and with the exception of the central bell tower, which will be only on the east side. The interlaced arches will be carried through the west side from chimney to chimney.

The ten small windows, on each side above water table, will have splayed jambs, arches, and sills.

The four large triple windows will have sills eight inches high. The jambs and mullions will be of the section shown on plan E, No. 1.

The columns of the jambs will have plinths, bases, and foliage capitals; and from the abacus of the capital an octagonal label mould will be carried around the head of the windows.

Chimneys.—Six chimneys springing from handsomely moulded brackets, and projecting two feet six inches from the face of the wall, with splayed corners well cut, will be carried from the water table to the height shown on plans. They will have octagonal mouldings, splayed cornices, and pierced windows, with battlemented tops of dimensions and workmanship directed by architect.

Interlaced arch.—Between the chimneys on the west side, and between the bell tower and the chimneys on the east side, an arcade of interlaced Norman arches, resting on handsome columns with neat plinths, bases, and capitals, and 18 inches higher than shown on plans, and cut in the best manner, will be placed. The arcade will rest on an octagonal sill course, supported by handsome moulded corbels or dentils, and will be capped with a heavy hook label moulding, with an 18-inch bed grooved to receive the roofing.

Bell tower will be carried up plain to the height shown on plans, with the corners cut true and even, and with two roll mouldings projecting from the north and south sides.

A corbel course of plain corbels will be carried around the top of the first story.

The coping of the first story will be a fillet and splay 18 inches in thickness.

The base course of the second story will be splayed on its upper bed, and well cut.

The corners of the tower will be splayed.

The window sills will be eight inches high.

The widow jambs will be cut to the form of a splay and column, with plinths, base, and capital.

The arch will be of same section as jamb, with a square moulding, taking the place of the shaft of the column, and around the arch a label, rising from neat corbels, will be carried.

The cornice will be a splay and fillet, and will be coped by a plain coping, per plans.

Battlement of ends, &c.—The machicolations under the battlement will overhang the walls two feet six inches. They will consist of semicircular arches, resting on handsome moulded corbels. Above this the battlement will rise; and where it is above the roof, it will be dressed on both sides, and 16 inches in thickness. The battlement will be coped with a handsome moulded coping.

Western connecting range—cloister.—The cloister will consist of three compartments, divided by buttresses, each containing a triple arched opening.

The two base courses will be carried along the front. In the basement seven small windows will be cut, with splayed sills, jambs, and arches.

An octagonal sill course will be carried under the sills of the cloister, with a bed and build of at least 24 inches, grooved to receive lead.

The buttresses between the triple arches will be well cut, and project eight inches beyond the walls above the arches. The pillars supporting the arches will be well cut, and will have plinths, bases, and handsome foliage caps, cut in the best manner. The arches will be of the section of a rebate and splay, and well cut on both sides.

A corbel course of semicircular arches, projecting eight inches from face

of wall, resting on handsome moulded drops, will be carried between the buttresses.

The cornice will be octagonal, well cut, with a bed of at least eighteen inches, grooved as usual.

The front of the connecting range behind the cloister will have windows, cut similar to those of the south front.

The south front will be divided by buttresses into seven bays. The two base courses will run along the whole front. Seven small windows with splayed jambs, sills, and arches, will be cut for the basement.

An octagonal sill course will be carried under the sills between the buttresses.

The window sills will be seven inches high.

The jambs, arches, and labels of the windows will be cut in the same manner as those of the eastern connecting range.

The corbel table, between the buttresses and the coping, will also be cut in the same manner as those of the eastern connecting range.

Clerestory.—The inside columns, shown on ground plan, supporting the clerestory, will be of granite, rough cut, and twelve inches square, with a skew back on each, with a top bed of 18 by 36 inches to receive the arches which support the clerestory.

The clerestory will be divided by buttresses, projecting six inches from its face into seven bays, and in each bay there will be a double or triple window, with splayed jambs, arches, and sills.

A corbel table projecting six inches from the face of the wall, of semi-circular arches, on plain moulded brackets, will be carried between the buttresses. The coping will be octagonal, 8 by 18 inches, with a groove, as usual.

West wing.—The bell tower will be divided into four stories, externally.

The first story, the door jamb and arch, will have a plain splay and engaged columns in a rebate.

Two small windows, with splayed sills, jambs, and arches, will be cut for the sides of first story.

The water table, under the second story, will be splayed on its upper bed.

The second story will have panelled sides, with semicircular heads, formed by the buttresses and arches, projecting from six to eight inches from the wall. All the corners of the tower, buttresses, and arches, will be well and truly cut. In each side of this story, there will be two small windows, with splayed sills, jambs, and arches.

Under the coping of the second story, a corbel course of nine handsomely-moulded corbels or dentils on each side of the tower, will be carried.

The octagonal coping will be well cut.

The base course and water table of the third story of the tower will be well cut.

Windows of third story.—The four windows of the third story will have sills seven inches high.

The jambs will be of the section of a splay and engaged column in a rebate, with handsomely-moulded plinths, bases, and foliage caps.

The tracery will be a trefoil head, well cut, and eight inches thick. The arches will be splayed, and an octagonal label resting on two handsome corbels will be carried round the arches.

A corbel course of 44 corbels will be carried around the third story under the coping, which will be octagonal.

The base course and water table of the fourth story will be well cut.

The windows will have sills eight inches high.

The jambs of the four windows will be a splay and engaged column in a rebate. The mullion will be a column, all with plinths, caps, and foliage bases.

The arch and tracery will be well cut, and an octagonal label resting on two corbels will be carried around the arch of each window.

The cornice will consist of five mouldings:

1st. An ovolo or ogee moulding.

2d. A zigzag or chevron, deeply and well cut.

3d. A splay.

4th. A corbel course of semicircular arches, resting on foliage corbels and projecting from eight to twelve inches.

5th. A hook label mould for the coping, 15 inches high, and 18 inches lower bed, with a groove, &c.

Apsis, or semicircular projection.—The apsis will be divided by eight buttresses, projecting eight inches from the face of the wall, into seven bays.

The upper base course or water table will project eight inches.

A sill course of octagonal form will be carried around under the sills between the buttresses.

The sills of the windows will be seven inches high.

The jambs and arches will be a plain splay, or a rebate.

In each bay, between the buttresses, there will be a corbelling of two semicircular arches, rising from the sides of the buttresses, and supported by a handsomely-carved and moulded corbel in the centre.

A corbel course of handsomely-moulded corbels, or dentils, will be carried all around under the octagonal coping of the first story.

An octagonal coping or cornice will be carried all around over the first story of the apsis.

Base course of second story will be a plain band, splayed on upper edge to shed water.

Over this and under the columns a stylobate of cut stone will be carried, from eighteen inches to two feet in height, well cut on the upper surface, between the column bases, to form the sills of the windows between the columns.

An arcade of columns and arches, having 14 arched openings, will be carried round the second story of the apsis.

The columns will have plinths, bases, and carved capitals, and will be detached entirely from the wall behind them. The wall behind the column will consist of pilasters, with plain bases and capitals.

The pilaster will project eight inches from the face of the sash. The arches will be of the section directed by architect, and will be cut in the best manner.

The face work over the arches will be set back three inches from the face of the arches, and well cut.

A corbel table, of semicircular arches, resting on moulded brackets, will be carried all around the apse, under the coping, (not dentils, as in plan,) and will project from eight to twelve inches from the face of the wall below.

The coping will be octagonal, 12 inches by 24 inches, well cut, and grooved to receive roof.

The wall behind apse will have a label course run across it, on a level of the top of the roof of the apse.

Circular window.—The jamb will be of the section directed by architect, and well cut.

The tracery will be 18 inches in thickness, exclusive of the columns on the face.

The quatrefoils and six-foil will be pierced through, and well and finely cut.

The columns will have plinths, bases, and caps, well cut and moulded. The moulding on which the columns rest will be octagonal, and well cut, and all the remaining work of the window will be cut in the best manner.

Cornice of gable will consist of a splay, with a double billet-mould, a band eighteen inches wide, well cut, and an octagonal coping 12 by 24 inches, grooved to receive the roof covering.

A handsome finial will be well cut, and for the apex of the gable.

Buttresses will be cut with base courses, buttress caps with mouldings, and arres on the corners, cut in the best manner.

South front of west wing.—Base courses will be carried across the front, of size, &c., hereinbefore specified.

Two small double windows, with splayed jambs, sills, and arches, will be cut for each side of the door-way.

The porch will project one foot from face of wall; all the arres will be well and truly cut.

The door will have a jamb of the section of a splay and an engaged column in a rebate, and will be 18 inches in depth, to the front of the door, and 24 inches depth in all.

All the columns of the door will have plinths, bases, and foliage caps. The arch will have an octagonal mould, in place of a shaft of column. Over the door, the quatrefoil will be well cut and deeply sunk. The coping will be cut to the form of an octagon, 8 inches high by 24 inches bed, well cut.

The water table over the basement will be well and truly cut, and handsomely splayed.

Over the water table, the sill course under the windows will be carried from buttress to buttress, and will be well cut to the form of five sides of an octagon.

The sills of the windows will be 12 inches in thickness.

The jambs of the windows will be cut to the form of a splay and engaged column in a rebate.

The centre columns or mullions will be well cut, and all the columns will have plinths, bases, and foliage capitals, well cut.

All the tracery will be 19 inches thick, the arches will be raised, and a quatrefoil will be pierced through the sunk panels of the tracery heads. There will be three windows in the east front.

Circular windows.—The jambs will be splayed.

The tracery will consist of columns, with handsome plinths, bases, and caps, with trefoil arches between the columns; the spaces on the backs of the trefoil heads will be panelled; the thickness of the tracery will be eight inches. The moulding under the bases of the columns and the central quatrefoil will be well cut.

A corbel table will be carried up under the cornice of the gables, of semi-

circular arches resting on moulded brackets, and projecting 10 to 12 inches from the face of the wall. The coping will be 12 by 24 inches, cut to the form of five sides of an octagon.

A handsome finial will be well cut for the apex of the gable.

The buttresses will have the corners well and truly cut, with moulded caps, finished in the best manner.

Sides of west wing.—The east side of the west wing will be finished in precisely the same manner as the west side, except so far as it is covered by the connecting range.

The base courses will be carried all around.

There will be six small windows in the basement, with splayed jambs, arches, and sills.

The water table will be carried all around over the basement, per directions of architect.

The buttresses projecting eight inches from the face of the walls, and connected with arched heads, will be carried up perfectly plumb, true, and even, and all the arses of the buttresses and arches will be well and truly cut.

Sill course under the windows will be cut to the form of five sides of an octagon.

The sills will be eight inches in thickness.

The jambs and arches of the windows will be splayed or rebated.

A corbel course will be carried all around both sides of the building, of large semicircular arches, supported on foliage brackets. The corbelling will project from 10 to 12 inches from the face of the wall.

The coping will be 12 by 24 inches, cut to an octagonal form, with a groove to receive roofing material.

The walls connecting the central rear tower and the main central buildings will be cut with doors, windows, arches, corbel courses, mouldings, and battlements, precisely similar to those hereinbefore described; connecting the central front towers with main central building.

GENERAL SPECIFICATIONS.

All the window sills will be splayed.

All the doors will have sills and steps of the size, rise, and tread, directed by architect.

All the door and window sills will be well patent-hammered, and brought to a joint not exceeding 3-16 of an inch. All the jambs and arches, with the labels over them, will be fine cut and patent-hammered, and no spauls will be allowed on their faces. In the jambs and arches of the principal doors, the joints shall not exceed 3-16 of an inch. In the jambs, arches, &c., of the remaining doors, and of all the windows, the joints shall not exceed 3-8 of an inch. In all the capitals of all the columns the foliage will be well relieved and truly cut, and the plinths of the columns will be in some cases octagonal, and in others circular and square, and well cut.

All the bands and mouldings will be well and truly cut, or rubbed.

All the ornamented bands and mouldings will be well relieved, and truly cut, or rubbed.

All the moulded and ornamented corbels will be cut in the best manner. The foliage will be well relieved.

And all the battlements, labels, buttress caps, and all the remaining cut work, will be executed in the most true and perfect manner.

All the cut work hereinbefore specified, of every description, will be of the form and dimensions and according to the plans furnished by the architect.

Contractors are referred to the following architectural works for the character of the different mouldings, capitals, and other ornaments, used in the building.

Doors, windows, and cloisters.—For capitals, bases, and plinths, see Moller's Denkmahler, part I, plate VI. Door of cathedral of Mayence, (A,) plate IX. Details of column, cathedral of Mayence, (B,) plate XI. Door of church of St. Leonard at Frankfort, (C,) plate XII. Door of the sacristy of the cathedral of Mayence, (D,) plates XIV, XV, and XVI. Details of the cloister of the church of Aschaffenburg, (E,) plate XVII. Details of the church of St. Paul at Worms, (F,) plate XVIII. Details of the doors of the transept at Friburg cathedral, (G.)

Also, Pugin and Le Keux's Normandy, plate V.

Also, Glossary of Architecture, plate 28; St. Nicholas, Caen, and St. Peter's, Northampton.

For corbel courses.—See Pugin and Le Keux's Normandy, plates 1, 10. Than church, plate 1, and Glossary of Architecture, plate 37.

For ornamented mouldings.—See Glossary of Architecture, all on plates 76, 77, and 78. Plate 79—cable, intersecting and cable, nail-head, star, lozenge and enriched lozenge. Plate 81—reticulated, diamond frette, and embattled frette. Plate 82—trellis and hollow square.

The above references are made with a view of presenting to the contractor the general style for the finish and character of the ornaments.

As the above specification, with the plans, is intended to cover the entire completion of the building, in every respect, in the most perfect manner, no extra claims will be allowed, unless caused by actual alterations in the plans. And the contractor will be bound by the sum of \$10,000 to submit all questions, controversies, and claims to the architect, whose decision upon the same shall be final and conclusive between the parties.

Specification of the carpenter's and joiner's work for the Smithsonian Institution.

TIMBER.

Basement story.—The floors of the basement of the west wing, and west connecting range, will be supported on yellow pine timber, 3 by 12 inches, set two feet (2 ft.) from centre to centre.

First story.—All the floors of the first story, except those of the chemical lecture room, students' working laboratory, front towers, campanile tower, octagonal tower, and central rear tower, will be supported on 3 by 12 inch timbers, of the best white pine, set sixteen inches (16 in.) from centre to centre. The girders into which these will be framed will be twelve inches (12 by 12 in.) square. The trimmers and trimmer beams will be 5 by 12 inches, and one trimmer will be placed at every hot-air flue, or one at every pier in the wall of the building. There will be one

longitudinal trimmer in the west wing, one in the west connecting range, four in the library, three in the central hall, three in the lecture-room, and two in the east connecting range.

Second story.—The timbers in the floor of the second story will be 3 by 12 inches, set 16 inches from centre to centre. The girders will be twelve inches square (12 by 12 in.) running longitudinally through the museum. The trimmers and trimmer beams will be 5 by 12 inches. The timbers will be of the best white pine.

Towers, &c.—All the floors of the towers will be of the best white pine timber, 3 by 12 inches square. There will be seven floors in the higher central front tower; five floors in the lower front tower; four floors in the central rear tower; seven floors in the octagonal tower; seven floors in the campanile tower; five floors in the tower of the west wing; two floors in the porch of the chemical lecture-room.

The floor-beams of the galleries of the museum, library, and lecture-rooms will be 3 by 10 inches, of the best white pine timber, set 16 inches from centre. The girders of the gallery fronts, 8 by 12 inches.

All these timbers and girders will be firmly anchored to the walls.

All the floors in the building will have one row of herring-bone bridging of joists, 3 by 4 inches, for every 12 feet of length of beam.

Columns.—There will be 56 columns, six inches square and twenty-two (22) feet high in the library, set per plan.

In the great lecture-room there will be 10 columns of iron, twenty-seven (27) feet high. (Plan No. 1.)

In the museum there will be 120 columns, six inches square, and 27 feet high.

Roofs.—The roof of the central building to be framed with a tie beam, one king post, two queen-posts, and four struts.

The timbers in all of the frames will be of the following forms, dimensions, and materials:

Tie-beam, 6 by 15 inches, of the best white pine.

Two rafters, 6 by 12 inches, of best white pine.

King-post, 6 by 8 inches, of best white oak.

Two queen-posts, 6 by 6 inches, of best white oak.

Four struts, 6 by 8 inches, of best white pine.

The roof plate will be 3 by 12 inches, of best white pine.

The purlines will be of the best white pine timber, 3 by 10 inches, set three feet (3 ft.) from centre to centre, quartered into the rafters two inches, (2 in.) and kept from slipping by brackets of white pine eighteen inches (18 in.) in length, firmly fastened to the rafters.

The roof of the east lecture room will be framed in the same manner as that of the central building, of timbers of the same size and material. Its span will be forty-nine feet, (49 ft.) and the number of frames seven (7.)

The roof of the east connecting range will also be framed in the same manner, of timbers of the same size and material. The number of frames in it will be six (6.)

The roof of the western wing will be framed in the same manner, and with timber of the same description, but of the following dimensions: tie-beam, 4 by 12 inches; rafters, 4 by 10 inches; king-post, 4 by 8 inches; queen posts, 4 by 6 inches; struts, 4 by 6 inches; purlines, 3 by 10

inches ; set three feet (3 ft.) from centre to centre. The number of frames in the west wing will be six (6.)

The roofs of the side aisles of the gallery of art, and of the cloisters in front of the two connecting ranges, will be framed according to section. (Plan E, No. 3.)

Tie-beam 3 by 8 inches, rafter 3 by 12 inches, strutt 3 by 6 inches, upright 3 by 6 inches, all of the best white pine timber.

There will be six frames in each side aisle and cloister.

The roof of the clerestory of the gallery of art will be framed of the following dimensions and materials :

Tie-beam, 5 by 12 inches, best white pine.

King-post, 5 by 7 inches, best white oak.

Two rafters, 5 by 10 inches, best white pine.

Two struts, 5 by 6 inches, best white pine.

The purlines will be 6 by 10 inches, set three feet (3 ft.) from centre to centre. The number of frames will be six (6.)

The roofs of the square towers will be framed in the form of a flat hip-ped roof, with diagonal and square tie beams, king post, struts, rafters, and purlines, of the same materials as above, and of dimensions suited for their respective spans.

The roof of the octagonal tower will be framed in a similar manner.

The roofs of the other towers will also be framed with diagonal and square tie beams, and hip-rafters, curved to the shape of roofs, and strongly braced with diagonal braces, struts, and uprights throughout.

All the remaining roofs, if any, including those of the porches, &c., are to be framed in such manner, and of such dimensions, timber, and workmanship, as shall be directed by the architect.

Deafening.—All the floors except those of the chemical lecture-room and students' working laboratory, and other fire-proof rooms, will be prepared for deafening, with strips and plank, in the best manner.

FLOORS.

Basement.—The floors of the basement of the west wing, and west central range, will be of the best Georgia yellow pine narrow plank, not more than five inches (5 in.) wide, laid in courses, and blind-nailed.

First story.—The floors of the library, lecture-room, cloisters, apparatus room, campanile tower, and in general all the floors of this story, except such as are directed to be tiled or flagged, and including the cloisters and side slides, which will be planked under the flagging, will be of the best clear Georgia yellow pine, narrow, $1\frac{1}{4}$ inch plank, laid in courses not more than five inches (5 in.) wide, and blind-nailed.

Second story.—The floor of the museum will be laid, first, of $1\frac{1}{4}$ inch narrow white pine plank, over which will be laid a mosaic or tessellated floor of black walnut, yellow pine, white oak, maple, and other American woods, arranged in such patterns as may be directed by the architect. The upper floor will be blind nailed to the lower one, and all its joints will be glued up strongly in the best manner.

Galleries, &c.—The floors of all the galleries of both stories, and all the floors of all the towers, will be of the best Georgia yellow pine, not more than five inches (5 in.) in width, blind-nailed, and laid in courses.

All the above floors will be of thoroughly seasoned $1\frac{1}{4}$ inch plank, planed,

tongued and grooved, and laid in courses in the best manner. All the butts and joints will be planed true, after the floors are laid. The plank must be free from sap, shakes, and black or unsound knots: and when *clear plank* is specified, it must be free from all blemishes.

Roof.—All the roofs of every part of the building and towers to be sheathed with $1\frac{1}{4}$ inch merchantable white pine plank, mill worked, and strongly nailed to the purlines. The sheathing to be free from sap, shakes, sun-cracks, and black or rotten knots.

Partitions and centres.—There will be a stud partition between the Regents' room and the rear staircase, which will be framed up of 3 by 4 inch joists, well bridged and trussed, and set twelve inches (12 in.) from centre to centre.

All the centres for the mason work, and stone-setting, to be furnished by the carpenter.

Furring.—All the outside walls, which are not lined with brick, to be furred with best 2 by 3 inch furring, set twelve inches (12 in.) from centre to centre.

Ceilings.—All the flat ceilings to be cross-furred with $1\frac{1}{2}$ by 2 inch stuff, set twelve inches (12 in.) from centre to centre.

Groined ceilings.—The ceilings of the west wing, east wing, west connecting range and its cloister, museum, rooms in the front towers, and the room in the campanile on the museum floor, of the principal porch, the Regents' room, the staircases, vestibules, central hall, and library, will be groined and ribbed, per plans, sections, and directions of the architect.

These ceilings will be groined as follows:

West wing.—Divided by columns and arches into three (3) aisles, each of seven (7) sections of groining, and composed of an artificial clerestory, under the roof, lighted by sky-lights, and two side aisles. The apsis will also be handsomely groined.

West connecting range.—The gallery of art will also be divided into a central nave with a clerestory, and two side aisles, each containing seven sections of groining or twenty-one (21) in all. The cloister will also have seven (7) sections of groining.

The library will be divided by pillars and arches into five aisles, each containing seven sections of groining, not including the small groins between the pillars, which will be groined per plan and directions of architect.

The central hall will be in one aisle, containing sections of groining, per plans.

The staircases will be groined per plans and directions of the architect.

The east wing will be in a single aisle, handsomely groined.

The Regents' room will have one section of groining, and a groined ceiling to the bay window.

The museum will be divided by pillars into five (5) aisles longitudinally, with a transept or transverse aisle, at the centre, groined in a single aisle. Each of the longitudinal aisles will contain fifteen sections of groining. The transverse aisle will contain two sections of groining, in front of the longitudinal aisles.

The rooms in the front towers will have each groined ceilings.

The front and rear staircase halls will be groined per directions of architect.

The ceiling of the rear staircase hall will be groined per plans and di-

rections of architect, as will also be the rear vestibule of the museum under the gallery.

The ceiling of the porch and vestibule, or stair hall of chemical lecture-room, one ceiling of campanile tower, and one ceiling on the first floor of the octagonal tower, will also be groined per directions of architect.

The ceiling of the principal porch will be groined per directions of architect.

The east cloister will be furred for a flat ceiling, with square panels and heavy ribbing.

The ceiling of the great lecture-room will also be panelled with heavy ribbing.

All the remaining ceilings in the building, and of the towers to the top, will be cross-furred.

Bracketing.—At the intersection of all the groins, as also when they meet the walls, and on all the rib lines shown on the ground plans, brackets for ribs will be formed in the best manner, to receive four (4) nails to each lath. Cornices will be bracketed out whenever required. All the pillars will be bracketed, as well as the half and quarter pillars, on the walls. Brackets for pillars will be set on the outside of all the wooden-door jambs, and at all the window jambs. There will be a boss or half-boss at every intersection of the ribs, all which bosses will be strongly bracketed, and in general all the bracketing necessary to complete the building will be furnished and put up.

All the above furring will be made of three thicknesses of $1\frac{1}{4}$ inch plank, strongly nailed and spiked together, and strongly hung from the floor and roof beams, by two inch plank.

All the brackets will be secured in the strongest manner.

Seats, &c.—The lecture-rooms and their galleries will have handsome settees of black walnut, with fronts carved to the shape of *old stalls* to each. The settees to have neat cap moulds and backs, and to be finished and carved in the best manner.

All the above black walnut will be oiled with the best raw linseed oil, three coats, well rubbed in.

Platforms and stage.—At one end of the great lecture-room a platform will be raised from 4 to 8 feet from the floor, for the length of one of the bays, to form a stage, and will have in front of it, and at the same level, an octagonal projection for the lecturer. The front of the platform will be wainscoted with narrow black walnut, $1\frac{1}{4}$ inch plank, tongued and grooved, and not more than four inches in width. The plank will be set on end, and will be neatly capped. On the projection a handsome carved table of black walnut will be provided, and a seat for the lecturer. Over the stage a canopy will be formed of joists, well framed, hanging down five feet from the ceiling, to conceal the rollers on which the illustrations are to be placed, and on each side of the stage a partition of joists (3 by 4 inches) will be carried out from the walls as far as the line of the front of the gallery, and terminating at the last pillar of the gallery. Thirty rollers of wood, six inches (6 inches) in diameter, and twenty-five feet (25 feet) long, will be hung behind the canopy. The rollers will have iron axles at their ends, working in iron eyes; and each roller will have a twelve inch sheave at one end for an endless cord to pass over, to work them. The ends of these rollers will also be concealed by a canopy of 3 by 4 inch joist hanging down five feet (5 feet) from the ceilings, and well framed.

Chemical lecture-room furniture.—A platform two feet (2 feet) high will be made, of strong joists and plank, raised from the front of the professor's front desk (A) to the rear of the room. On this the desk (A) will be placed, which will be of the dimensions shown on the plans, and will have drawers on all sides. The other desk (B) will be made in the same manner and similarly furnished.

Behind the front lecturer's desk a partition will be carried across, having sliding doors handsomely panelled, 3 inches in thickness, with proper fixtures, per plans. In the side of this partition, facing the lecture-room, there will be closets, with shelves, three feet in depth, and having sash doors, filled with good American glass.

The laboratory behind the lecture-room will be divided into two stories, connected by two flights of handsome staircases.

The first story will be divided into three apartments; the centre one of which will contain the working table (B) hereinbefore described, and will be shelved all around, except where occupied by doors and windows, to a height of eight feet. These shelves will be enclosed above a line three feet high, by panelled doors hung in boxes with weights, cords, and pulleys, like sash, and below that line the closets will be projected to form a table 15 inches wide, below which there will be a range of drawers about 6 inches deep, and below the drawers a range of closets with panelled doors. On the room to the right hand there will be two tables (A) two feet wide and eight feet long, made of three thicknesses of narrow $1\frac{1}{2}$ inch white pine plank, not more than three inches in width, planed on both sides, tongued and grooved, and put together diagonally with glue and screws, and having strong legs. The remaining part of the walls will be shelved off as in the preceding apartment.

On the room to the left there will be a working table (G) three feet wide and seven feet long, made similarly to those above described. The partition wall next centre will be shelved off as in the other apartments. Racks of shelves, with holes bored in them, will be placed on each side of the sink (F.) In the second story of the laboratory, which will also be divided into three apartments, the centre one will contain in the centre a series of shelves, resting like steps from the partition wall to the rear, to a height of seven feet. The walls will be shelved with shelves one foot in width, enclosed in sash doors hung with weights, cords and pulleys, like window sash, and, with the two remaining rooms, will be lighted with skylights of best double-thickness American glass in the roof, and interior skylights in the ceiling, with fancy sash, filled with best English crown glass, (A.)

In the east connecting range, which will be also divided internally into two (2) stories above the basement, the first story will contain a students' working laboratory, in the centre of which will be two strong tables in the form of the letter T, the tops of which will be of soapstone flags. These tables will be furnished with drawers, shelves and closets.

All around the sides of the rooms not otherwise occupied, there will be tables two feet nine inches wide with wooded tops, and drawers and closets; below and above these tables shelved closets, with sash doors hung with weights, cords and pulleys, will be carried to a height of eight feet from the floor. Stairs three feet wide, and well finished, will connect this laboratory with the second story. The second story above the laboratory will be divided into three apartments, one 15 by 14, as a private room for

the lecturer; and the other two 12 by 25, one of which will have strong tables all around, and the other fitted with closets, drawers and shelves, with sash doors, as above, all around.

Sash and glass.—All the windows of every kind, size, and description, in every part of the building and towers, both interior and exterior, will be fitted with square sash, set diamond-wise, and filled with the best English crown glass. The windows will be hung in frames with cords, weights, and pulleys, and will be finished in every respect in the best possible manner.

Inside windows, balustrades, gallery fronts, carving, &c.—There will be two circular windows in the central hall (per plan of library) carved of the best white pine; also one triple or two double windows between the Regents' room and the rear stairway, and 12 triple windows in the clerestory of the west wing. These will be carved in the best manner, of the best white pine, according to the directions of the architect. All these windows will have frames and sash, and be filled with glass as described above. Their mullions will be of wood, painted four (4) coats, to resemble the walls of the interior, and sanded.

There will be open balustrades three feet six inches (3 feet 6 inches) high, of black walnut, or of best white pine painted and grained, as may be directed, carried all around the front of the galleries of the museum and library, as well at the ends as at the sides, per plans. The balusters will be circular pillars with turned bases and carved capitals, supporting carved trefoil arches, over which a handsome moulded top rail will be carried, per plans.

The gallery front of the great lecture-room will consist of pillars with carved bases and capitals, as above, supporting semicircular carved arches, over and under which will be a large hook label mould well and deeply sunk, all of black walnut. At the distance of two inches (2 inches) behind this arcade, a wainscoting of one inch black walnut boards, not more than four inches wide, and set vertically, will be carried around to form the front of the gallery, and from the top of the label to this wainscoat a top board of black walnut $1\frac{1}{2}$ inch thick will be carried, to form a book board for the gallery front.

The gallery front will be four feet six inches (4 feet 6 inches) in height.

The gallery fronts of the chemical lecture-room will be framed of strong 3 by 10 inch timber, which will be wainscoted on both sides four feet (4 feet) high, with $\frac{3}{4}$ -inch black walnut boards, not more than four inches in width, capped on the outside with a handsome label, and having a label mould at bottom. And in general, all the work necessary to make the gallery fronts complete, is to be performed.

Stairs.—The principal front stairs will consist of two double flights, one on each side of the entrance hall. The steps will be five feet three inches (5 feet 3 inches) in width, and the well will be from eighteen inches to two feet (18 inches to 2 feet) in width. There will be a 7 inch square carved newel to each flight, with the sides handsomely panelled.

The balusters will be octagonal pillars, with turned bases and caps, having a semicircular arch with a trefoil head between them, and will be surmounted by a top rail, 4 by 6 inches, handsomely moulded. The stairs will have handsome coves and brackets hanging down below the underside of the steps. The steps will be supported by wrought-iron frames, properly put together to insure stability. The risers will be of

the best white pine, and the treads of the best Georgia yellow pine. And the underside of the stairs will be furred ready for plastering.

The stairs will rise from the ground floor to a point four feet (4 feet) below the under side of the roof timbers, say a height of forty-three feet (43 feet) or thereabout. At this height the upper platforms or landings will be placed. At one end of each of these a door will be placed which will communicate with the front towers. A spiral staircase will be carried up from the level of these upper platforms to the top of the higher of the two front towers. This staircase will be six feet (6 feet) in diameter, and will be partitioned off in one corner of the tower. It will have proper platforms and doors of communication to the different stories of the tower, of which there will be four (4) above the roof of the main building. This staircase will open on the roof of the tower, which will be nearly flat, and is to be used as a place of observation.

A similar staircase will extend from the same level upwards to the floor of the upper story of the lower central front tower.

Both of the above stairs will have treads and risers of yellow pine, with handsome coves and nosings. They will be ceiled in with $\frac{1}{2}$ -inch white pine plank, will have windows in the partitions for light, and will have neat 3 by 4-inch black walnut hand rails, supported by iron elbows.

The principal rear stairs, about twenty-three feet (23 feet) in height, of rise and of the form and dimensions shown on plans, will be finished in a manner exactly similar, and of the same materials and workmanship, as the principal front stairs described above.

Staircases in campanile tower.—The interior of the campanile tower will be eleven feet (11 feet) square, and will be occupied, at the level of the museum floor, with a staircase having steps four feet (4 feet) in width, and a well three feet square in the centre. This staircase will lead from the ground floor of the museum to its gallery, and have steps, risers, balusters, newels, coves, brackets, &c., of a similar character to the principal stairs above specified. Above the level of the gallery floor a small stairway two feet six inches in width will be carried in flights, per direction of architect, to the upper story of the tower. The stairway will be partitioned off from the tower by joists, and in the partition doors will be framed and set to communicate with the two upper stories of the tower.

Staircases of octagonal tower.—A winding staircase with steps three feet in width, having a clustered column in the centre, will lead in this tower from the floor of the library to the gallery. The steps will be supported against the wall and the central column by iron stringers, and the hand-rail will be of black walnut. The sides of the tower will be wainscoted up to the under side of the hand-rail, and the central column will be formed of clusters of circular columns of wood. The wainscoat and columns will be painted four coats, and column sanded to represent marble. A hand-rail of black walnut, supported on handsome iron elbows, will be carried around the column. The ceiling of the octagonal tower over this staircase will be groined. A staircase, similar in all respects, and similarly furnished, will lead from the floor to the gallery of the museum. Above this line a smaller staircase will be carried to the summit of the tower. All the treads and risers in these stairways will be of the best yellow pine.

On each side of the rear entrance to the museum a flight of steps three feet wide will lead from the ground floor to the gallery, with balus-

ters, rails, arches, trefoils, newels, coves, and brackets, similar to those of the principal front stairs.

The *stairs to the chemical lecture-room* and its gallery will be placed in the porch on the eastern end of the chemical lecture-room wing. They will consist of two flights: one in the porch, leading level of the porch floor to that of the chemical lecture-room floor, and one in a double flight, landing from the latter level to the gallery. The latter will have steps, coves, newels, balusters, arches, &c., similar in character to those of the two principal staircases, but of smaller horizontal dimensions. Beneath the latter stairs a flight of steps will lead from the level of the chemical lecture room floor to the floor of the basement beneath it. These will have risers and treads of yellow pine, and plain octagonal newels five inches (5 inches) in diameter. The balusters will be octagonal, two inches (2 inches) in diameter, with 8 by 4 inch rails, all of black walnut.

The *stairs in tower of west wing* will be square, filling the whole of the tower, and will be carried first to a level with the floor of the first story, and then to the top of the side aisle arches, with handsome octagonal balusters two inches (2 inches) in diameter, with semicircular arches between those of the same finish, &c., as the two principal staircases, with a square newel handsomely carved, and a 3 by 4 inch moulded hand-rail, all of black walnut. The sides of the tower will be wainscoted to the height of the hand-rail.

The *private stairs to Regents' room*, lecturers' room, and muniment room, will be in the small octagonal tower attached to the central rear tower. They will be carried from the level of the surface of the ground, to the third story of the tower, or muniment room, a height of about seventy feet, (70 feet.) They will wind around a column from 8 to 12 inches in diameter, and will have treads and risers of yellow pine, and a handsome moulded hand-rail, 3 by 4 inches, of black walnut, secured to the walls by iron elbows. The walls will be wainscoted, on end, with black walnut, as specified in former instances, to the height of hand-rail.

Laboratory stairs.—Private stairs, with steps three feet in width, having octagonal balusters two inches (2 inches) in diameter, and 3 by 4 inch moulded rail, of black walnut, will be carried from the ground floor of laboratory, at the end of the chemical lecture-room, to the second floor. A flight of stairs, also three feet (3 feet) in width, will be carried from the first story of the east connecting range to the second story of the same, a height of about thirteen feet. They will be partitioned off with 3 by 4 inch joists, and will have a 3 by 4 inch hand-rail fastened to the wall, both with iron elbows. Under these stairs a flight of similar width, and similarly finished, will be carried from the first floor to the cellar.

Stairs in library and museum.—Twelve small flights of circular stairs will be carried, at the places shown in the plans, from the ground floor and to the galleries of the library and museum. They will be supported on iron, and there will be a trap-door above each of them in the gallery floor, hung on best hinges, which will serve for the purpose of communicating with the galleries.

Elevators.—In each of the smaller towers at the corners of the main building, elevators, having each three (3) shelves, set three (3) feet apart, and framed strongly together, will be furnished. They will be provided with sheaves, cords, and will have cast iron counterpoises running in boxes on the four sides of the tower. The elevators will be worked by a

crank, and will be used for raising books and other heavy weights from the bottom to the top of the building.

Doors and their furniture.—All the doors of every part of the building will have semicircular heads, and handsome trimmings and casings, of the same style as the building.

The central front and rear doors will be made of four thicknesses, of 1½ inch white pine plank, laid together diagonally. The outside plank will be of the best clear white pine, and the two inner layers of the best merchantable white pine, all perfectly seasoned. The plank will be narrow, and all of the even width of six inches, (6 inches.) The outer layers will be set diagonally, and all beaded and cross-beaded.

All the plank will be planed, tongued, and grooved, and will be strongly screwed or rivetted together, with white lead in the joints, and painted on all sides.

The hinges, and key plates, and knob plates, will be of heavy wrought iron scroll work, bronzed in the best manner; and the doors will be grained white oak, and will be varnished four coats.

Furniture of apparatus rooms.—The room in the east connecting range behind the east lecture-room, and the room on the same floor in the campanile tower, will be shelved all around, with closets, having panelled doors below, and sash doors above, glazed with good single-thickness American glass.

Furniture of library.—See plans and sections for the arrangement of the cases. The cases will have sash doors, and will be shelved per direction of architect. The doors will be glazed with good single-thickness American glass, in diamonds, or squares set diamond-wise, or will be filled with wire gauze. All the pillars of the cases will be handsomely turned, the doors and sashes of the best workmanship. All the mouldings in the arches will be well worked, and all the capitals and bases neatly turned, and ornamented with stucco ornaments, or well carved.

On the ground floor of the library, at every alcove formed by the pillars and cases, a sliding door, handsomely panelled and moulded, 2½ inches thick, filled with ground glass and sash in the panels, will be made to slide between the longitudinal bookcases, so as to shut off the alcove completely from the central aisle. These doors will be fourteen (14) in number, with handsome trimmings, and will each be furnished with an astragal lock, astragal sheaves and sheaveway, of the best description.

The spaces between the bookcases of the galleries and the ceilings of the aisles will be furred up for plastering.

Four tables, each fifteen feet (15 feet) long and five (5 feet) broad, will be made of black walnut, to be set along the centre aisle of the library. These tables will have handsome carved legs, and be covered with green broadcloth.

A small desk of black walnut will be furnished for each of the alcoves.

The librarian's room, adjoining the library, will have handsome bookcases finished in a style similar to those of the library, with glass doors, &c. All the furniture of the apparatus rooms and library, except where otherwise specified, will be of the best clear, thoroughly seasoned white pine, painted three coats with the best oil paint, grained, if so directed, to resemble oak, and varnished four coats.

Museum furniture.—The museum furniture will be arranged per plans and directions of the architect. All the cases will be of the designs shown

on the plans, and will be made of the best thoroughly seasoned clear white pine, handsomely carved, turned, and moulded, with caps and bases similar to those of library, and neat mouldings on the arches. The sashes will be filled with the best French cylinder glass. The spaces between the tops of the gallery cases and the ceilings of the side aisles of the galleries will also be furred up for plastering. The cases will vary in width from four to five feet, (4 to 5 feet.) There will be two rows of cases running longitudinally, in the larger spaces between the columns, the whole length of the room below the galleries, and one case on each side of each of the alcoves, both of the ground floor and galleries. At both ends of the room, cases three feet (3 feet) wide will be carried up to the under side of the end galleries, as per plan.

All the above cases will be ornamented, carved, and finished per plan and directions of architect, painted three coats best white lead in oil, grained and varnished three coats.

The transverse aisle of museum will have cases of similar make and finish carried around the sides and front, except at the stair entrances. These cases will be eighteen inches (18 inches) in depth.

The two rooms in the front tower will be covered all around with cases nine feet (9 feet) high, of similar design, make, and finish, as will also the room in the companile tower.

The room over the rear stairs will have cases nine feet (9 feet) high, of similar design, make, and finish with the above.

The room over the Secretary's room, in the rear central tower, will be fitted with plain cases, shelved, and with doors glazed with good single thickness American glass all around.

All the remaining outside doors will be made in a similar manner, and of similar material to the above, of three thicknesses of one and a half inch plank.

All the inside doors of the basement will have neat and plain casings, with semicircular heads of white pine, painted and grained, white oak or any other wood that may be directed, and varnished four coats. The doors will be made of black walnut or white pine one and a half inch plank, put together diagonally in two thicknesses, grained to imitate such wood as may be directed, and varnished three coats.

All the doors of the towers above the roof line will have handsome jambs and arches of white pine, grained and varnished as above.

The doors will be of two thicknesses, of one and a half inch black walnut, or butternut, or white pine, painted, grained, and varnished as above.

The principal doors of the library, museum, galleries of art, Regents' room, and lecture rooms, will have jambs and arches of the section of a double rebate, with an engaged column or octagonal mould each. The columns will have plinths, bases, and caps, well trimmed and handsomely carved.

The doors will be made of three thicknesses of one and a quarter inch plank, butternut, or black walnut, or white pine, grained in the best manner, and varnished four coats, with bronze scroll hinges, key, and knob plates, &c.

All the smaller doors of the above rooms, and of the remainder of the building, will be made of three thicknesses of three and a quarter inch plank, of the same description of materials and workmanship as the above,

and with similar hinges, &c. The jambs and arches to be of similar description and workmanship to those of the principal doors.

All the knobs of all the above doors to be of bronze. The locks to be of the best manufacture, and largest size, suitable to the dimensions of the doors. All the outside doors and principal room doors to have strong bolts.

The sliding doors in the library alcoves to be furnished with sheaves, sheave-ways, astragals, and astragal locks, of the best description.

And in general all the doors for the whole building to be finished as above-described, in the best and most workmanlike manner, and in all respects in accordance with the directions and plans of the architect.

Roofing, &c.—All the roofs, except those of the central front towers, campanile towers of the main building and west wing, and smaller octagonal and square towers of the central building, will be tiuned with best single-cross tin, soldered together in the best manner, painted two coats, and warranted tight for five years. All the gutters of every part of the building, and the roof of the larger central front tower, will be of the best double-cross tin, and painted two coats. All the leaders, which will be put in in sufficient numbers to carry off the water to the cisterns in the roofs, and to the ground, will be of best double-cross tin, varying from four to six inches in diameter, and made square or octagonal. If so directed, they will be painted three coats, and sanded in the second coat, the third coat being coursed to resemble stone; and they will be put in of such sizes and in such number and situations as the architect shall direct.

All the remaining roofs (i. e. of the towers, &c.) above excepted, will be made of the best Welsh slate of large size, and laid in the best manner, according to the directions of the architect.

Cisterns.—In each of the roofs of the two connecting ranges a cistern of 10 feet square, and four feet six inches deep, which will receive the water of the main building, will be made of best three-inch narrow yellow pine plank, framed up with best 6 by 6 inch joist, like a mill race, and lined with best sheet lead, weighing five pounds to the square foot. These will be fed by a leader from the roofs of the main building, and will have an overflow or waste weir communicating with another leader, which will carry off the surplus water to the ground.

In the spaces between the central front and central rear towers and the main building, two cisterns, 6 by 12 feet, and four feet six inches deep, of similar materials and workmanship to the above, will be placed. These will be fed by the water from the towers of the front and rear.

The roofs where all of the above cisterns are placed will be strengthened to bear their weight, by additional rafters, tie-beams, king posts, and struts.

Water closets.—There will be two water closets, one on each side of the rear staircase, between the Regents' room and museum, on the second floor, which will be furnished with cisterns, ball cocks, traps, cranks, basins, cocks, &c., of the best description, with brass furniture, and will be finished complete in every respect. They will be fed by one and a half inch extra strong lead pipe, from the cisterns above described. The waste-pipe will be five inches in diameter, of best sheet lead, five pounds to the square foot, which will be carried to a sess-pool on the outside of the tower.

There will also be one water closet in the thickness of the walls of the large front central tower, one in the campanile tower, or near it, one in the basement of the chemical wing, and one in the west connecting range. All of the above to be completely finished in the best manner, with all fixtures necessary to render them complete, fed from the cisterns in the roofs, and having waste pipes of five inches diameter, as above, communicating with cess-pools on the outside of the building.

Bases of best clear white pine, painted three coats, grained in the best manner to imitate such wood as may be directed, or of black walnut or butternut, varnished in all cases four coats, will be carried around the rooms, halls, galleries, &c., of heights varying from four to fifteen inches, and they will be all handsomely moulded, and worked in the best manner, according to the directions of the architect.

Mantel.—A large mantelpiece of very handsome design, as may be directed by architect, will be carved from best black walnut, for the Secretary's room. The whole mantel, with its columns, frieze, and shelf, and the ornaments on it, shall be filled with carved Norman mouldings, deeply sunk, and of best description.

Finish of Regents' room and bay window connected with it.—All the walls of the above will be wainscoted with black walnut or butternut, as may be directed by architect, handsomely panelled, and carved all around with pateras, quatrefoils, and capped with a heavily-carved mould corbel-course, surmounted by a carved cable-mould.

In the side bays of the triple arch, between the room and the bay window, seats of black walnut, or butternut, handsomely carved, will be formed.

All the jambs and arches of the triple-window arch will be moulded and carved per plans and directions of architect.

Eighteen heavily-carved arm-chairs, and one heavily-carved table, in the Norman style, will be carved for the Regents' room, from best black walnut, varnished four coats, and polished. The whole to be carved according to the designs and directions of the architect.

Skylights.—There will be six skylights, five feet square, in the roof to the chemical laboratory; two skylights, five feet square, in the central front stair hall; two of same dimensions to rear stair hall; and twelve skylights, five feet square, to the west wing; all filled with good double thickness American glass, in 2-inch sash. And under these, in all the ceilings of the above rooms, will be interim skylights, filled with best single thickness American glass in handsome fancy sash.

Painting.—All the wood work, of every description, including the shelves of the cases, and in general all the wood work not otherwise specified, to be painted three coats of best white lead and boiled oil.

All the doors and their jambs to be varnished four coats.

All the wood of every description to be perfectly seasoned, and to be free from sap, shakes, black or rotten knots, and all imperfections that might endanger its strength or durability.

All the workmanship, of every kind, to be performed in the best and most perfect manner.

The whole of the above carpenter work, of every description, and all the work connected with it, to be performed according to the plans and directions of the architect.

As it is intended that the above specifications and the plans will cover

the whole and perfect completion of the building, and all of its appurtenances, no claim for extra work will be allowed unless caused by actual alterations of the plans. And the parties to the contract will be bound to submit to the decision of the architect of the building, in the sum of ten thousand dollars.

JAMES RENWICK, JR.,
Architect and Civil Engineer.

Mr. Hough offered the following resolution, which was adopted :

Resolved, That in locating the building for the Smithsonian Institution, the centre of the principal building, exclusive of projections, be placed upon the centre of the lot or site of said institution from north to south, and upon the centre of Tenth street.

Mr. Hough, in offering the above resolution, stated, that as he was compelled, on Monday next, to leave the city, he desired to say, that if this resolution should be reconsidered, so as to place the building centrally between 7th and 12th streets, he would make no objection.

And, on motion, the committee adjourned.

SIXTEENTH MEETING—MARCH 24, 1847.

Present, Messrs. Seaton and Owen.

The chairman submitted from Mr. Renwick, architect of the institution, the following

Report to the Building Committee of the Smithsonian Institution.

GENTLEMEN: In compliance with your resolution of Friday, the 19th ultimo, by which, in company with Dr. Owen, I was directed to examine and report upon the quarries of freestone on the farm of Mr. Peter, at Seneca creek and Bull run, and those on the adjacent lands, with a view of ascertaining their capability of affording a sufficient quantity of building-material of good quality, and of color suitable for the purposes of the institution, I beg leave to state that we proceeded on Saturday morning to the localities of the quarries of freestone occupying the whole eastern bank of the Potomac, from the mouth of the Seneca creek to a point distant about one mile north of it, where our examination terminated. We also found the stone extending up all the valleys of the smaller streams, as far as we examined them.

The quality of the stone varies from that which is highly argillaceous, and easily decomposed, to that which is silicious, and well calculated to stand the weather and the attacks of frost.

It also varies in color and texture; some of the strata being highly laminated, and others what is technically termed liver-rock, showing but little signs of stratification; and the color varies from a cold blue to a warm lilac gray.

The quarries which appear to have been worked to the greatest extent, are those called the College quarries, from their belonging to the College at Georgetown. The color of the stone in these is generally a blue gray, (see specimen 21, of Dr. Owen's report,) and is rather cold and unpleasant in its aspect; though several of the strata or layers in the middle of the

quarry were of a pleasant and warm gray. See specimen No. 23. These latter, however, are difficult of access, having several strata of inferior stone over them, and cannot therefore be obtained without great and unnecessary expense, and should only be resorted to in the event that no other stone of equal color and quality can be found in a more favorable position.

The College quarries lie to the northwest of Bull run and Seneca creek. The dip of the strata is at an inclination of about 20° to the southwest.

To the northwest of these quarries, and on the same face, are quarries belonging to Mr. Peter, where we found the buff-colored stone; (specimen No. 24.) It is much to be regretted that this stone is neither sufficiently durable, from its being argillaceous, nor found in sufficient quantities for the purposes of the institution, as, in my opinion, it surpasses in color any stone I have as yet seen in this country; resembling in hue that used in Edinburgh, and the Caen and Bath stones, which were so much used and so highly esteemed by the architects of the middle ages.

To the north of this quarry is one belonging to Mr. Lee. The color of the stone in this is a warm gray, and the texture is fine and highly silicious, and the quality is excellent. It is a liver-rock, and is found in several strata of considerable thickness, which would afford an abundant supply. Some of the layers, however, contain copper, which might possibly render it liable to stain by long exposure, unless carefully selected. See specimen No. 25.

From this quarry, the most northern one we examined, we proceeded in a southeasterly direction, recrossing the College quarry to the Bull run, belonging to Mr. Peter. The quarry on this run has been opened at a point up the stream, distant about 300 yards east of the Potomac.

The stone is of excellent quality, of even color, being of a warm gray, a lilac tint resembling that known as ashes of roses, and can, from all indications, be found in sufficient quantities to supply all the face work for the institution.

There appear to be three layers of this color, which are, respectively, 20, 24, and 30 inches in thickness.

The stone is highly silicious, rings when struck with the hammer, and where it has been exposed in the bed of the Bull run to the action of the water and frost apparently for ages, and in the culvert under the canal for several years, shows little or no signs of decay.

We traced strata of this color from the present quarries to the mouth of the Bull run, and found it between an overlying layer of a shaly or slaty argillaceous quality, (which is easily decomposed, and must therefore be very carefully avoided,) and a substratum of the dark red-colored stone, (see No. 18 of Dr. Owen's report.) We also found stone of the same color and quality in an old quarry, distant about 600 feet south from the mouth of the Bull run; thus rendering a sufficient supply almost certain.

The strata lie well for quarrying, having but a slight covering and sloping towards the run, thus enabling it to be quarried without binding, which will render the expense small; and the color is equal to that of any stone we examined, except the buff. In company with Mr. Peter, we next visited a house built of coursed and hammered rubble masonry of stone of this color, in which it had a pleasing and airy effect upon the eye. Mr. Peter's stable is also built of stone of this color, and produces

an excellect effect. From the above examinations, we were therefore of opinion that Lee's quarries, and those on the Bull run, combine, more than any of the others we have visited, the requisites most necessary for structure, durability, and beauty.

We would also recommend, if the quarry on the Bull run be chosen, that none darker than specimen No. 19 in Dr. Owen's report be allowed to be used in the building, and that great care be taken to prevent any of the argillaceous stone being used; and if Lee's quarry should be selected, that all rock showing indications of copper be prohibited from being used. I subjoin herewith a rough topographical map of the region, in which the distances and localities are put down from memory, as the limited time of our visit prevented any accurate measurements.

Respectfully submitted.

JAMES RENWICK, JR., *Architect.*

On motion of Mr. Owen, it was

Resolved, That the architect cause to be procured and dressed a block of freestone, of the warm gray color, from Lee's quarry; and also, that he cause to be dressed, in ashlar finish, a portion of the block of freestone from Bull run quarry, now lying before the west wing of the City Hall.

On motion of Mr. Seaton, it was

Resolved, That the chairman address a letter to the president of the Chesapeake and Ohio canal, asking a reduction of the rates of toll on said canal, in favor of the contractor.

Mr Mills, superintendent, submitted to the committee several specimens of freestone, of excellent quality and good color, from the neighborhood of Aquia creek, Virginia.

On motion of Mr. Owen, it was

Resolved, That Dr. Owen visit and report upon the Aquia creek quarries of freestone.

And, on motion, the committee adjourned.

SEVENTEENTH MEETING—MARCH 25, 1847.

Present, Messrs. Owen and Seaton.

The chairman laid before the committee the copy of a letter, which, in accordance with the instructions, he had addressed to the president of the Chesapeake and Ohio Canal Company, as follows:

WASHINGTON, *March 25, 1847.*

SIR: I am instructed by the building committee of the Smithsonian Institution to inquire of you, whether, in the event of the selection of a building material by them from quarries in the neighborhood of Seneca creek, your company would consent to reduce the rate of toll, so far as regards the buildings of the Smithsonian Institution.

The amount required by us may, in a measure, depend upon your answer, as it is not yet determined upon what we will back the walls with. If Seneca stone be taken for the entire walls, I suppose that 10,000 perches of 25 feet may be required.

The Maryland railroad companies had agreed, in event of our selecting

marble, to reduce their rates of freight, in our favor, from 4 cents to 2½ cents per ton per mile.

I am, sir, your obedient servant,

ROBERT DALE OWEN,
Chairman of the Building Committee.

To the PRESIDENT
of the Chesapeake and Ohio Canal Company.

On motion of Mr. Owen, it was

Resolved, That the architect be, and he is hereby instructed, during the course of the present year, to commence and carry on to completion the whole of the east wing and the east connecting range, so far as is consistent with the safety of the structure; and also, to commence the foundations of the west wing and the west connecting range, and take such preparatory steps towards the work of the said wing and range as may allow the contractors to prosecute the work with proper economy.

On motion of Mr. Seaton, it was

Resolved, That the architect be authorized to cause to be prepared two perspective views of the building—one of the north front, from the northwest, and one of the south front, from the southeast—provided the cost of completing the two said views in the best style of art shall not exceed two hundred dollars; and that the same be colored to correspond with the color of the stone that may be adopted for the facing of the building.

On motion of Mr. Seaton, it was

Resolved, That Mr. Owen endeavor to procure from the several railroad companies between this city and New York, a free passage for the architect of the institution, pending the erection of the building.

And, on motion, the committee adjourned.

EIGHTEENTH MEETING—MARCH 26, 1847.

Present, Messrs. Owen and Seaton.

The chairman submitted the following letter from Mr. Peter, owner of Bull run quarry, and other quarries in the vicinity of Seneca creek :

MONTE VIDEO, (*near Darnestown, Montgomery County,
Maryland,*) March 22, 1847.

DEAR SIR: Yours of the 18th instant was received on Saturday last, in which you state that the building committee have decided to use as the material in the erection of the Smithsonian Institution the stone from some one of my quarries, and that they accept the terms as communicated in my letter of the 9th of December to Mr. Seaton, to wit:

Twenty-five cents a perch for all stone intended for face or cut work, and twelve and a half cents per perch for all calculated for backing or rubble work.

The whole number of quarries will be subject to your preference, and I will be pleased if you will make the selection at as early a day as convenient, as there are several persons applying for permission to obtain stone for other purposes.

Yours, very respectfully,

JOHN P. C. PETER.

Hon. ROBT. DALE OWEN,
Chairman Building Committee.

On motion of Mr. Seaton, it was

Resolved, That the final decision on the subject embraced in Mr. Peter's letter be delayed until the return of Dr. Owen from Aquia creek, and until his report on the quarries there is received.

On motion of Mr. Seaton, it was

Resolved, That among the trees to be planted within the grounds of the institution there be included the following :

Elm, beech, oak, osage, orange, pecan, sugar maple, silver-leaved maple, weeping-willow, silver-leaved willow, magnolia grandiflora, pride of China, common laurel, tulip tree, dogwood, holly, hawthorn, horsechestnut, Spanish chesnut, walnut, hickory, mountain ash, lime tree, evergreens, (including the several varieties of pines,) aspen, and sycamore.

And, on motion, the committee adjourned.

NINETEENTH MEETING—MARCH 30, 1847.

Present, Messrs. Seaton and Owen.

The chairman submitted from Dr. Owen the following

Report on the Aquia creek and other Stafford county freestones.

To the Building Committee of the Smithsonian Institution :

GENTLEMEN : On the 26th of March, agreeably to a resolution passed by your committee, I proceeded down the Potomac to examine the quarries of freestone of Stafford county, Virginia.

On arriving at the mouth of Aquia creek, which is 50 miles from Washington, I learned that the quarries which have been chiefly wrought for the public buildings lie about seven miles up that stream.

On my way I stopped at Major Brook's, five miles on this side of Fredricksburg, to obtain some information about the route. Learning from that gentleman that there were several good quarries of freestone in his immediate vicinity, on Accokeek creek, and near the line of the railroad, I determined to visit them.

I found them situated on both sides of Accokeek creek, close to Major Brook's mill-dam. The upper beds here are about six to eight feet above the level of the creek, and are of a coarse texture, approaching to the nature of a conglomerate. Beneath, about four to five feet above the level of the creek, the rock is finer-grained, with some yellow and gray streaks, (see No. 26.) The rock on this part of Accokeek is below the level of the water when the flood-gates of the mill-race are closed. It was here that the rock of which the mill-dam is constructed was quarried. So far, it has stood the test of exposure in this situation well. The abutments of the railroad viaduct over Accokeek creek are constructed of rock from these quarries ; and though the selection does not seem to have been very carefully made, it still remains a substantial work.

The quarries on Aquia creek most convenient to navigation, and those which furnish a rock lightest colored, finest grained, and most uniform, are situated on what is called the Island, being a neck of land seven miles by the course of the stream from its mouth. This island is elevated 15 to 20 feet above a flat swampy plain, which surrounds it on every side, and which, in the early settlement of the country, was an inland bay, navigable for small craft.

At present the waters are contracted into the narrow channel of Aquia creek, about 15 feet wide.

One of the quarries on this island is known by the name of Stewart's quarry, but now owned by Mr. Symington, of Baltimore. To the north and south of it are two others, belonging to the United States.

The columns of the east portico of the Capitol, each of a single piece weighing 18 tons, were obtained at these United States quarries.

The principal ledge hitherto worked here has a covering of only two or three feet of earth, and lies nearly horizontal, in a vast bed from six to eight or 10 feet in thickness, without the slightest apparent seam. For this reason, though the bed is so near the surface, it has been quarried at great expense, at least by the method hitherto employed, which is to groove it behind and on one side two feet wide, (or sufficient to receive a man,) in a vertical direction, even to its base, and then "loft" it off in a horizontal direction by the introduction of wedges at the bottom of the bed in the direction of the stratification.

This Island freestone is of light color, almost white when dry; and is equal, if not superior, in texture and color, to any of the sandstones in this neighborhood. That on Symington's tract (see specimen No. 27) is rather of a finer grain than in either of the United States quarries; (see specimen 28.)

Part of the rock employed on the inside of the Post Office was procured on this island.

Numerous other quarries are found in this vicinity, many of them well opened and wrought to a considerable extent. None are, however, immediately on the bank of Aquia creek. Some lie to the east of the swamp, in the ridge which lies between Aquia creek and the Potomac river, and distant from the latter stream from three to seven miles. These were not visited, as there were no means of crossing the swamp. Others have been opened in many places along the banks of Rocky run.

The stream empties into Austin's run, which bounds the island and swamp on the southwest. That nearest to Aquia creek is distant from half a mile to three quarters of a mile, and is situated on the south side of Rocky run, close to the road which leads from the island to Captain Towson's. This quarry affords a tolerable freestone, (see specimen No. 29,) but it has spots and streaks in it, and is of rather a coarser texture and not so uniform in color as the Island quarry.

About one mile further on the same road, and distant about a mile and a half from Aquia creek, on the north side of Rocky run, is Towson's Beech quarry, which has been wrought to a considerable extent, and has, as most of the quarries here, a fine face on it, all having been worked on the old-fashioned plan of "grooving" and "lofting," as heretofore described. The rock at this locality is of a very fair quality; little inferior to Symington's Island quarry, (see specimen No. 30,) and well situated as regards drainage and covering for quarrying. Occasional clay and ferruginous spots are visible; but a large supply could probably be obtained here, by proper selection, free from any very unsightly flaws or blemishes.

Half a mile further on, or two miles from Aquia creek, on the south side of Rocky run, is Robinson's quarry, the property of Mr. Galehorn.

It will be observed, by specimen numbered 31, that the texture of the rock at this place is rather finer, and the color more of a buff, than at the previously described quarry.

Two and a half miles from Aquia creek, and distant about half a mile to a quarter of a mile from Captain Towson's house, is another quarry of freestone belonging to that gentleman. The beds here are free to work, but much more interlaminated or leafy in structure, than any of the quarries examined, and certainly less durable; (see specimen No. 32.) The face of this specimen on which the number stands, gives a good idea of the tint which this rock acquires by time and exposure.

On Jackson's branch of Rocky run, from a mile to a mile and a half south from the island, is a bold quarry, owned by Peggy Norman. The rock here is no doubt durable, but exceedingly indurated, and would be nearly as expensive to cut as granite; (see specimen No. 33.)

Besides the quarries here enumerated, various others have been opened on both sides of Rocky run, of similar quality and appearance to those already described. In fact, every hill for many miles in this neighborhood is composed of solid beds of freestone, varying in texture from a conglomerate and even pudding stone, to a fine grained rock similar to number 25, and varying in shade from a yellowish brown and a buff color, to a nearly pure white. It is probable enough, that as new quarries are opened a better material may be found than any yet disclosed.

In none of the quarries visited in Stafford county did I observe red and pink freestones like those of Seneca creek. Neither did I see there any of those schistose beds, with green cupreous incrustations, such as occur in the sandstone formation of the upper Potomac, in the cupferschiefer of Germany, the copper States of England, and the Permian system of Russia. On the geological charts of this region, these freestones are designated as of the same age as the red sandstones of the Connecticut valley and New Jersey. They differ from these materially in lithological character, and apparently in associated minerals, so far as I have had opportunity of judging; nevertheless, they may be cotemporaneous; this can be ascertained only by a careful search after organic remains, which time did not permit.

On my return to the watering station on Accokeek, I stopped at Major Brook's for the purpose of seeing a quarryman who has had long experience not only in the quarries of Aquia and Accokeek creeks, but also in the marble and granite quarries of the eastern States.

He informed me that at seven miles from the mouth of Aquia creek, close to the railroad, at the high bridge on Potomac run, there are solid ledges of freestone in an escarpment of 90 feet; and according to his statement, there is at that locality a bed very similar in texture and color to that previously described as owned by Symington. Unfortunately, it lies deep seated, and would require a stripping of about 15 feet to get at it; but he says that the strata rise, as you proceed up the Potomac run, to the west, and that there is reason to believe that the ledge in question can be found near the surface about a quarter of a mile from the railroad. If it remains of uniform texture for that distance, a material not inferior in quality to the best rock on the island might be quarried there more convenient to transportation, and in a much more healthy situation, than on the island, surrounded, as that locality is on all sides, by low marshy plains.

On questioning this man with regard to the comparative expense of quarrying freestone there and on Seneca creek, he confidently asserted that by a judicious mode of drilling and very careful blasting, rock might be quarried even cheaper here than on Seneca creek, although at the latter

locality the beds, being thinner and of a less "livery" nature, can be easily split by the "plug and feather," because on Aquia and Accokeek creeks, and Potomac run, there is much less stripping, and because the beds lie more level and undisturbed. This, however, is certain—that by the old method employed by Captain Towson, dimension stone from Aquia creek has hitherto cost \$6 per ton of 15 cubic feet, or 40 cents per foot; and even these prices have not afforded an extravagant profit to the owners of quarries; whilst there can be little doubt that dimension-stone can be furnished from Seneca creek for half that amount.

If good material could be obtained near the line of the railroad, either in the neighborhood of Potomac run, or, still nearer, the mouth of Aquia creek, transportation would certainly not cost as much as from the quarries on the Island and Rocky run. There are several obstructions between the quarry and the mouth of the creek, which render it often necessary to lighten the vessels by means of scows, over these bars, and none of the vessels of suitable draught for the navigation of Aquia creek carry over 80 to 100 tons; whereas, if laden at the terminus of the railroad, they could easily carry double that amount, requiring but the same number of hands.

From all the workable beds of freestone of Stafford county, so far as they had been opened, a very considerable portion must be rejected on account of flaws and stains; but, as a general rule, there is less than in the Seneca quarries.

The general appearance of the lighter (buff-colored) beds of the freestones of Stafford county, Virginia, laid up in range work, may be seen by inspecting the east gate-way of the President's House, the entrances to the Capitol grounds, and the inside work of the Post Office.

Under the magnifier, minute dark specks may be observed of the color of blacksmiths' scales, which are probably small grains of a mixture of the protoxide and peroxide of iron. If this be their composition, they will, doubtless, in peroxidating, acquire a yellowish or reddish color. Still, in many specimens these are so minute, that the effect would be only to mellow the color, without materially affecting the durability of the mass. That a proportion of this stone is free from material blemish and is a durable material, is confirmed by an inspection of the ledges and blocks in sight, and in the structures composed of the best rock, long exposed to atmospheric vicissitudes; by the glistening particles disseminated on the face of fresh fractures; by the action of the rock on the edge of the dressing tool, indicative of a tolerably pure grit-stone, free from argillaceous admixture; by the heavy solid bed in which it lies in the quarry, generally free from interlamination; and, finally, by the hardening of the mass by exposure.

I incline to believe that the sample of Aquia creek freestone furnished to Dr. Page for examination was not equal to the average quality of the better quarries in Stafford county.

Mr. Dixon, the contractor, is of opinion that the general run of the freestones will be somewhat but not very much more expensive to work and carve than the Seneca sandstones.

As the result of my examination of these quarries, in connexion with those of the upper Potomac, I state my belief, that the Stafford county region can furnish an unlimited supply of freestone, of which, by dint of careful selection, a portion may be obtained both sound and durable; not,

indeed, free from yellowish or gray streaks, nor, certainly, of as fine a grain as the lilac-gray of Seneca creek, but not disfigured by conspicuous holes, pebbles, or stains, such as are almost universal in the blocks to be seen in the public buildings in Washington, where this material has been used.

I think it owes its present bad character as much to indiscriminate selection as to inherent defects. Its color, occasionally approaching that of marble, is in its favor, though time and the weather change it for the worse. (See specimen No. 32, on the face where marked.)

It would make a lighter and more airy-looking building than the lilac-gray. But I am convinced that it could not be delivered in Washington nearly as cheap as the latter; especially if, as the owners of the Aquia creek quarries thought, slave labor only could be employed there. And I feel assured that, even with reasonable care in selection, the chance of procuring the white sandstones unblemished by disfiguring spots or stains, is uncertain; far more so than in the case of the lilac-gray.

Upon the whole, this latter material, as found in the middle beds of Bull run quarry, seems to me the safest and best of the Potomac freestones; somewhat darker, indeed, than one would desire, if the choice were free, but uniform in color, improving in its tint by the bleaching effect of time, not liable to be disfigured by accumulation of smoke and dust, and of unquestionable solidity and durability.

I annex to this report a rough chart of the freestone quarries of Aquia creek, drawn by the eye, without actual measurement. It will give a general idea of their relative situation.

All of which is respectfully submitted.

DAVID DALE OWEN.

WASHINGTON, *March 30, 1847.*

Specimens referred to in the foregoing report.

- No. 26. Major Brook's quarry, lower beds.
- No. 27. Symington's island quarry.
- No. 28. United States island quarry.
- No. 29. Beard's quarry on Rocky run.
- No. 30. Towson's Beech quarry.
- No. 31. Robinson's quarry, owned by Galehorn.
- No. 32. Towson's quarry, near his house.
- No. 33. Peggy Norman's quarry, on Jackson's branch.

On motion of Mr. Seaton, it was

Resolved, That the material for the external walls of the building be freestone, of the lilac-gray color, similar to specimen No. 19 of Dr. Owen's report on the freestones of Seneca creek, and that none be used darker than that specimen; to be taken either from Bull run quarry, or from any other contiguous quarry furnishing freestone of the same color and of equal quality.

Resolved, That a copy of this resolution be furnished to the contractors, and that specimen No. 19, above referred to, be carefully preserved for reference.

Resolved, That if two wells be opened by the contractors, of such size and description and in such spots as may be designated by the architect,

the committee will allow for them, when the building is completed, whatever they may then be worth.

Resolved, That a copy of the foregoing resolution be furnished to the contractors.

And, on motion, the committee adjourned.

TWENTIETH MEETING—MARCH 31, 1847.

Present, Messrs. Seaton and Owen.

The chairman laid before the committee the following letter, in reply to that addressed by him to the president of the Chesapeake and Ohio Canal Company :

FREDERICK, *March 29, 1847.*

SIR : Your letter of the 25th instant, making inquiry whether the Chesapeake and Ohio Canal Company would consent to reduce the rates of toll on stone, "so far as regards the buildings of the Smithsonian Institution," has been received, and I will present it to the consideration of the board of president and directors at their next meeting, on the 7th of April, and communicate to you their answer.

I would here, however, merely remark, that the toll charged on stone at present on the canal is 1 cent per perch per mile for twenty miles, and 1½ cent per perch per mile for any greater distance it may be carried ; and that with their rates and the usual charge made by boatmen for transporting it, the cost by the canal would, I think, be less than by the railroad, even at the reduced charge mentioned in your letter.

Very respectfully, your obedient servant,

J. M. COALE,

President of the Chesapeake and Ohio Canal Company.

To the Hon. ROBERT DALE OWEN.

On motion of Mr. Owen, it was

Resolved, That Mr. Seaton be a sub-committee to see the Commissioner of Public Buildings, and endeavor to procure from him permission for the contractors to use the remains of the old fence standing on such portions of the mall between 7th and 12th streets as is not included in the site of the institution.

Mr. Owen stated to the committee that it was his intention to proceed to-morrow to New York, for the purpose of making preliminary arrangements regarding the preparation and publication of the work on "Public Architecture" intrusted to him, as per resolution passed by this committee on the 6th instant, and that he would take that opportunity of communicating with the several presidents of the railroad companies between Washington and New York, and endeavor to procure a free ticket on those roads for the architect of the institution.

And, on motion, the committee adjourned.

TWENTY-FIRST MEETING—APRIL 6, 1847.

Present, Messrs. Seaton and Owen.

Mr. Owen having returned from New York, made, in regard to his proceedings there, the following report :

After conversing with the principal publishers in New York, in regard to the terms on which they would be willing to publish the volume of "Public Architecture," of which the preparation was intrusted to me by resolution of the committee of the 6th March, I finally, with the aid of Mr. Drayton, (to whom I am greatly indebted for the valuable information and assistance he gave me,) made with Wiley & Putnam, one of the most respectable firms of the city, the following contract:

Agreement between Wiley & Putnam, publishers of the city of New York, of the first part, and the Building Committee of the Smithsonian Institution, by the chairman of said committee, of the second part, dated this 3d day of April, 1847.

Whereas the said building committee are charged with the preparation and publication of a volume on architecture, to be entitled "Hints on Public Architecture," and to contain numerous and valuable illustrations, including two perspective views of the buildings of the said Smithsonian Institution, and also to have an appendix containing the results of a research about to be made under the auspices of the said institution, to test the properties of the most important building-materials throughout the United States :

Now the parties of the first part hereby contract and agree to have the said work set up in small pica, of such face as the said committee shall select, thin-lead for the body of the work, and either small pica solid or long primer for the appendix, at the option of said committee. And the said parties of the first part agree, that the letter-press paper shall measure $19\frac{1}{2}$ inches by 26, and that it shall be of such quality as to cost not less than 16 cents per pound, and that each ream shall weigh not less than 40 pounds. And the parties of the first part further agree, that the printing shall be done in the best manner, with ink of the first quality, and the wood-cuts carefully overlaid, (so as to give their full effect,) by a suitable person accustomed to such work; and also, that the copperplate paper shall be of quality as good as the letter-press paper, of the same size, and of the proper thickness and qualities required for fine illustrations, and that the copperplate printing shall be done in the best manner. And the said parties of the first part further agree, that the page of printed matter shall be about five inches and three-quarters by nine inches, and that the binding shall be in cloth, gilt lettered, and of such material as shall cost thirty cents per volume. And the said parties of the first part agree to do the whole of the above work, including materials, at their own cost and expense.

And the party of the second part agree that they will furnish, at their own cost and expense, the entire illustrations for said work, including two perspective views of the Smithsonian Institution, and that the said illustrations shall be of such number and quality as shall cost one thousand dollars, and said illustrations shall be executed in the best style of art; and that as many of the said illustrations as are to be incorporated with the text shall be wood-cuts, and that the rest shall be either copperplate or steel engravings; and that they will deliver the same to the parties of the first part free of all charge, and completely ready for printing. And the said parties of the second part further agree that they will furnish to the parties of the first part the manuscript of the said work free of all charge, and that the same

shall not exceed, including the appendix, one hundred and fifty printed pages.

And for and in consideration of the furnishing, by the said parties of the second part, of the illustrations and manuscript as aforesaid, the parties of the first part agree to deliver to the parties of the second part five hundred copies of the said work, complete and bound as aforesaid, so soon as the same can be prepared; and they further agree that, so soon as the sale of the said work shall have returned to them the cost of composition, printing, paper, and binding, then, out of the first profits of the same they the said party of the first part will further deliver to the parties of the second part additional copies of the said work until the said additional copies amount to five hundred, so that the whole number of copies furnished shall be one thousand in all, free of all charge to the parties of the second part.

And it is mutually agreed that after the delivery of the said thousand copies the said illustrations shall be and remain the property of the parties of the first part; but the said parties of the first part agree that they will at any time, on being thereto required by the parties of the second part, deliver to the said parties of the second part any number of impressions from any of the said plates at the cost of paper and printing.

And the said parties of the first part agree that so soon as the illustrations and manuscript are delivered to them, they will cause the said work to be published without unnecessary delay.

In testimony whereof, the parties of the first part have hereunto set their hands and seals, and the chairman of the said building committee has hereunto subscribed his name, on the behalf of the said building committee, the day and year above written.

ROBERT DALE OWEN, *Chairman,*
on behalf of Building Committee of Smithsonian Institution.

RATHBUN ALLEN,
Witness as to signature of Robert Dale Owen.

WILEY & PUTNAM.

WILLIAM B. GRAVES,
Witness as to signature of Wiley & Putnam.

The size selected is what is called long quarto, and its somewhat oblong shape is suitable for plates. The price stipulated for the paper, \$6 40 a ream, insures its good quality. The size of the paper and of type, and the size of the printed page, were selected in part with reference to the probable form of our Transactions, which form, I think, might advantageously be copied, without variation, from this volume.

I found that no publisher would agree to deliver to us one thousand copies at once, nor until they had secured a return of the money actually expended by them. They were all of opinion that so large a number as one thousand copies distributed at the outset, would so injure the sale as to make it a losing business.

As it was necessary to obtain considerable assistance from Mr. Renwick in preparing drawings for wood-cut illustrations, revising text, &c., I made a verbal agreement with him that, in return for such assistance as I might have occasion to require of him, he should receive twenty-five

copies of the work out of the first 500, and 25 copies more out of the second five hundred received by us.

By these arrangements the entire sum of one thousand dollars, appropriated for the publication of this work, can be expended on illustrations, giving much increased value to it.

With a view still to increase that value, I took some steps which I hope will secure us additional illustrations executed in the best style.

Finding that the marble front of Stewart's new dry-goods store in Broadway was probably the finest specimen of the modern Italian style of architecture in the United States, I procured an introduction to Mr. Stewart's partner, (Mr. S. being now in Europe,) and proposed to him that if he would expend \$100 to furnish us an elevation of his store, on steel, we would afterwards, if he desired it, furnish him as many copies as he might require at the cost of paper and printing. He said he would write immediately to Mr. Stewart; that he did not doubt that he would agree to it. He is to communicate the result to Mr. Renwick, who will superintend the preparation of the plate.

I was also introduced by Mr. Renwick to the principal vestrymen of Grace church; and he expressed to me his hope that he could obtain from the vestry a vote for a similar plate of that church, a fine specimen of the latter or Flamboyant gothic.

I also commissioned Mr. Renwick, who is acquainted with some of the vestry at Trinity church, to see them, and try to obtain a plate of that edifice.

These plates, if obtained, would furnish excellent illustrations of the most suitable character, and give much additional character to the publication.

I called upon A. B. Durand, president of the Academy of Design, now a portrait and historical painter, and formerly the best engineer in the United States, and ascertained his opinion, that the best engravers for portraits in the United States are Cassilear, 22 Bleeker street, New York, and Cheeney, of Philadelphia.

He considers Roberts, of New York, the best wood-cutter. He thinks that to Cassilear or Cheeney the portrait of Smithson, for our Transactions, should be intrusted.

I called on Robert Schuyler, president of the Brunswick and New York railroad, in regard to a season ticket, or free ticket, for our architect, Mr. Renwick. There is no chance of obtaining a free ticket. A season ticket at a reduced rate may possibly be obtained. Mr. Schuyler promised to write to me on the subject.

I did not until further consultation decide whether the perspective drawings of our institution, &c., should be in quarto or double quarto form. The folding of the latter seems to me so objectionable, that I incline to the former, though it be somewhat small for so extensive a building.

Respectfully submitted, by

ROBERT DALE OWEN.

On motion of Mr. Seaton, it was

Resolved, That the prospective views of the institution, alluded to in the above report, be executed in quarto form.

The chairman submitted from the superintendent the following communication:

APRIL 6, 1847.

DEAR SIR: On consulting with the Commissioner of Public Buildings in relation to the use, by the committee, of the old fence around the mall, between 7th and 12th streets, to enclose the lot of the institution, between the same points, he agrees to allow so much of the same as is necessary for this purpose.

I have made an estimate to determine what the expense would be of removing, repairing, and enclosing this open fence with a five feet height of palings, and found it would amount to four hundred dollars.

The circuit of these grounds is 3,680 feet.

Mr. Dixon reports that the expense of conducting the water from the Market-house pipe to the building, will cost six hundred and fifty dollars.

Respectfully submitted.

ROBERT MILLS,
Assistant Architect and Sup't Smithsonian Institution.

To the Hon. ROBERT DALE OWEN,
*Chairman of the Building Committee
of the Smithsonian Institution.*

On motion of Mr. Seaton, it was

Resolved, That, for the purpose of conveying to the building a supply of water, as well for the builders as for the permanent uses of the institution, the consent of the Commissioner of the Public Buildings be requested for drawing a supply from the water plug at the Centre Market-house, to be conveyed thence, by a leaden pipe, to the institution.

Resolved, That an arrangement be made with some responsible contractor for laying said pipes, provided the cost thereof does not exceed \$650.

Resolved, That the resolution of the 30th ultimo, in regard to the digging two wells, be, and the same is hereby, rescinded.

Resolved, That Mr. Downer, or some other responsible person, be employed to build a substantial paling fence around the institution ground, provided the same cost not more than \$400, and that the fence be as high as the present rails will permit with safety.

And, on motion, the committee adjourned.

TWENTY-SECOND MEETING—APRIL 9, 1847.

Present, Messrs. Seaton and Owen.

Mr. Owen stated to the committee that he had spoken with one of the Regents, Mr. A. D. Bache, on the subject of procuring a steel plate of the Girard College, from the managers of the said institution, on the same terms proposed to Mr. Stewart, as mentioned in his (Mr. O.'s) report of April 6; and that Mr. Bache promised to write on the subject to the principal manager of the Girard College, and to communicate the result to the committee.

Mr. Owen also stated that he had written on the same subject to Mr. Richard Rush, Regent, from Philadelphia, requesting him to use his influence to procure for us the said plate.

Mr. Seaton stated that he was about to write a similar letter to Mr. Ogden Hoffman, one of the vestrymen of Calvary church, New

York, with the view of procuring a plate of that church on similar terms, as a specimen of the lancet gothic style of architecture; and that he would communicate the result to the committee.

Mr. Owen submitted from the contractor, Mr. Dixon, the following :

WASHINGTON, *April 8, 1847.*

GENTLEMEN : After minute examination of all the quarries on Mr. Peter's land, it is extremely doubtful to me whether or not a sufficient quantity of the stone on which the contract is based can be procured in any of his quarries, as that stratum seems to be nearly exhausted. There seems to be abundance of stone in the bed under which No. 19 has been worked off; but it appears to be of a much deeper color, and a great deal harder in its texture, and could not be cut at anything like the price of No. 19 stone.

There are, I am told, a great many quarries of sandstone on Seneca creek, on Mr. Vincent's* land; but knowing that your board was about to adjourn, I hastened back to make this statement, and had not time to examine them.

Respectfully, &c.,

JAMES DIXON.

To the BUILDING COMMITTEE

of the Smithsonian Institution.

P. S.—If I am right in my opinion that the Bull run quarries will not produce the stone that you have selected, it might be well enough for the board, before their final adjournment, to pass a resolution to this effect: that some discretionary power be left with the architect to change or modify the material, otherwise the building would necessarily come to a stand; but this I leave to your better comprehension.

J. D.

Laid on the table.

Mr. Owen submitted from Mr. Joel Downer, carpenter, the following offer to put up a temporary fence around the grounds of the institution:

WASHINGTON, *April 8, 1848.*

GENTLEMEN: I will contract to enclose the ground with a paling fence from 5 feet 8 inches to 6 feet, average; the palings to be sawed, three inches wide, of the best quality that comes to our market; the palings to be nailed on the rails with three nailings, and 6 nails in each paling, with a bottom board averaging 12 inches in width. It is understood that the posts and rails now standing on 12th street and B street are to be righted up and made use of; and the posts and rails for the north and east line are to be taken up from the public enclosure, and used for that purpose. I will put up the fence in a good and substantial manner for four hundred dollars.

Respectfully,

JOEL DOWNER.

To the BUILDING COMMITTEE

of the Smithsonian Institution.

* Supposed Charles Vinson: see p. 43.—R. D. O.

[NOTE.—On inquiry, I learn that the above bid includes all materials, though not expressly so stated.

ROBERT DALE OWEN.]

Laid on the table.

Ordered, That, for the present, the services of Wm. McPeak, messenger, be dispensed with.

On motion of Mr. Owen,

Resolved, That the architect be authorized to cause to be erected on the ground a secure temporary building, as an office for the said architect, provided the same shall not cost over two hundred dollars.

The chairman stated to the committee the request of Mr. Mills, the superintendent, that he be allowed the use of the lower rooms in the City Hall which were granted by the corporation to the building committee, until the same are required by the committee.

Ordered, That Mr. Mills be allowed the use of said rooms accordingly.

On motion of Mr. Owen, it was

Resolved, That the city surveyor be requested to make out a plat of the grounds of the Smithsonian Institution, laying down the levels at each intersection of one hundred feet.

And, on motion, the committee adjourned.

TWENTY-THIRD MEETING—APRIL 10, 1847.

Present. Messrs. Seaton and Owen.

Mr. Owen submitted for consideration the following resolutions, relative to the work on "Public Architecture," of which the preparation had been intrusted to him:

Resolved, That the work on "Public Architecture," to be published by the committee, contain a comparative review of the advantages, economy, and facility of adaptation to modern purposes, of various styles of public architecture, particularly the Grecian, modern Italian, Gothic of different ages, and Norman; giving the actual cost, compared to extent of accommodations, of some of the principal public edifices in the United States, in the various styles, including some of the public buildings in Washington, and others erected by the general government.

Resolved, That, so far as the funds permit, the said work contain illustrations, in the best style of art, representing such among the public buildings of the United States as exhibit the purest specimens of architecture, in various styles, including two perspective views of the Smithsonian Institution, on steel; one perspective view of the gothic plan submitted for competition by Mr. James Renwick, jr., architect of the institution; one perspective view of the Norman plan submitted by Mr. Haviland, provided he (Mr. H.) will, at his own cost, reduce the drawing to the required size; one perspective view either of the plan submitted by Mr. Arnot, or that submitted by Mr. Notman, provided the architect will, at his own cost, reduce the drawing to the required size; one geometrical elevation of the Italian plan submitted by Mr. Daniel, of Cincinnati, provided he will reduce the same; also ground plans and geometrical elevations of the Smithsonian Institution, and one or two interiors of the same.

Resolved, That application be made, in the proper quarters, for plates of the following public edifices, to wit:

1. Girard College.
2. Stewart's dry-goods store, Broadway, New York.
3. Grace Church, New York.
4. Trinity Church, New York.
5. Calvary Church, New York.

And if the respective authorities are willing to furnish such plates, without cost, then that the same be used in the said work, accompanied by a brief description of each edifice. And in that case, that the chairman of the building committee be empowered to agree with those furnishing the said plates, that the Smithsonian Institution will, at any time, furnish to them as many impressions from the plates thus furnished by them as they may desire, at the cost of paper and printing.

Resolved, That, if the funds permit, the said work contain a geometrical or perspective view of the east front of the Capitol of the United States, and a geometrical elevation of the south front of the General Post Office.

In submitting the above resolutions, Mr. Owen stated to the committee that it was his intention, in order as far as possible to avoid expense to the institution, to prepare as much of the work as practicable at home, and for that purpose he would take with him a few works on architecture; but that it would be necessary for him to spend some weeks in New York, and probably in Washington, to consult authorities to which he had not access at home, to receive the necessary aid from Mr. Renwick, and to take steps for the preparation of the illustrations.

The above resolutions, after deliberation, were adopted.

And, on motion, the committee adjourned.

TWENTY-FOURTH MEETING—APRIL 11, 1847.

Present, Messrs. Seaton and Owen.

The chairman laid before the committee the following letter:

DARNESTOWN, MONTGOMERY COUNTY, MD.,

April 7, 1847.

DEAR SIR: Mr. Dixon was here yesterday, and made a superficial examination of the quarries, but made no selection, as you informed me would be his purpose, in your letter to me dated the 31st of March. He admitted, as I think must be apparent to any one, that stone of similar character with the specimen which he says the committee have adopted may be found in abundance for all your purposes. Indeed, upon examination we find it embraced in a much larger field than I had before observed, and I have no doubt it could be obtained to any extent that may be required.

The quarries, from the characteristic position of the stone and the partial manner in which they have been worked, present a different appearance from such as we commonly see; but as an evidence of the facility with which they may be worked, there is a party now engaged in getting stone from them for the use of Mr. Berry, who has contracted to deliver the same in Washington for twenty cents a cubic foot; and I have no doubt Mr. Dixon could get his stone delivered much more readily for the same, as the quantity he would require would justify the contractor in working the quarry to a much greater advantage.

I would only add that the kind of stone that I understand you have selected may be obtained here in any quantity you may require, and the difference in the expense of using it is a full justification for its selection.

I have been induced to make this communication to guard you against any unfavorable impression Mr. Dixon may be induced to make, in which I feel justified by expressions he used when here.

Yours, very respectfully,

JOHN P. C. PETER.

Hon. ROBERT DALE OWEN,

Chairman of the Building Committee Smithsonian Institution.

Laid on the table.

Mr. Owen, in connexion with the subject of the above letter, stated to the committee that he had written to the architect, Mr. Renwick, informing him that the committee adhere to their resolution regarding the color and quality of building-material for the external walls, and look to him to see it strictly carried out.

The chairman laid before the committee, from the ex-messenger, McPeak, the following letter:

WASHINGTON, April 11, 1847.

SIR: Believing that I can render good service to the committee in my capacity as messenger, both in attending in the office and overlooking the grounds of the institution, and removing nuisances, therefore I would respectfully offer my services to the committee at one dollar per day.

Respectfully,

WM. McPEAK.

Hon. ROBERT DALE OWEN,

Chairman of the Building Committee Smithsonian Institution.

Laid on the table.

And, on motion, the committee adjourned.

TWENTY-FIFTH MEETING—APRIL 12, 1847.

Present, Messrs. Totten, Seaton, and Owen.

Mr. Totten, having returned from Mexico, took his seat on the committee.

The chairman laid before the committee several specimens of building-stone, similar in color and quality to specimen No. 19 of Dr. Owen's report on the sandstones of the Potomac, from the quarries of Charles Vinson, Seneca Mills; (see his letter to the building committee, page 42 of this journal.) The chairman stated that Dr. Owen had examined the specimens, and considered them equal to specimen No. 19.

The journal of the building committee, contract with James Dixon & Co., and specifications and plan of foundations of the building, prepared by the architect, were submitted to Mr. Totten, and examined by him.

Mr. Totten stated to the committee that the duration of his stay in Washington was uncertain, and that he might be called upon to visit some of the fortifications of the United States in the course of two or three weeks.

On motion of Mr. Owen, it was

Resolved, That Mr. Renwick be requested to return to Washington within a fortnight, so as to confer on the subject of the details of erection of the building with Mr. Totten.

And, on motion, the committee adjourned.

TWENTY-SIXTH MEETING—APRIL 14, 1847.

Present, Messrs. Seaton and Owen.

Mr. Seaton submitted to the committee the following letter from Captain Buckingham, whom he stated to be known to himself as having executed with faithfulness and ability, both for the city corporation and the government, work of the same character as that for which he here proposes to contract:

WASHINGTON, April 14, 1847.

SIR: I have made a calculation of the expense of conducting the water from the Market square to the buildings of the Smithsonian Institution, on the mall.

I will agree to furnish all the necessary material, and put down the pipes to said building, for six hundred and fifty dollars, and take the necessary risk. I calculate that there are about 2,000 feet in all.

Respectfully, your obedient servant,

C. BUCKINGHAM.

WM. W. SEATON, Esq.

Captain Buckingham appeared; and, on being questioned, informed the committee that his proposal was for a leaden pipe of inch-bore, and of the quality called "strong pipe;" that he proposed to lay the pipe down not less than two feet under ground, and to cross the canal with a two-inch iron pipe, laid down below the bed of the canal.

On motion of Mr. Owen, it was

Resolved, That a contract with Captain Buckingham be prepared, in accordance with the above offer; stipulating that the work be completed in one month from this date.

The communication of William McPeak, laid on the table on the 11th inst., being called up, it was

Ordered, That William McPeak be re-engaged as messenger, to commence from the 7th inst., at six dollars per week.

Mr. French, masonic Grand Master of the District of Columbia, appeared before the committee, and expressed, on behalf of the Grand Lodge of the District of Columbia, their willingness to assist in laying the corner-stone of the Smithsonian Institution with masonic ceremonies.

On motion of Mr. Seaton, it was

Resolved, That the Grand Lodge of the District of Columbia be invited, in connexion with any other masonic lodges who may unite with them, to aid in laying the corner-stone of the Smithsonian Institution; and that Saturday, the first day of May, be recommended as a suitable day for that purpose.

Resolved, That Mr. Owen be a committee to wait upon the President of the United States and invite him, as head of the corporation, to lay the

said foundation-stone ; and also to wait upon the Vice President of the United States and invite his presence, as Chancellor of the institution, to deliver a brief address on said occasion.

Resolved, That Mr. Seaton be authorized to pay any incidental expenses that may be necessarily incurred on said occasion.

Resolved, That the contractor be requested to prepare a suitable corner-stone.

Mr. Owen expressed to the committee his intention—as Colonel Totten had returned, and a quorum could thus be obtained without him—of returning, within a few days, home to Indiana ; and his regret that, in consequence, he would not be able to be present at the proposed ceremony.

And, on motion, the committee adjourned.

TWENTY-SEVENTH MEETING—APRIL 15, 1847.

Present, Messrs. Seaton and Owen.

The chairman presented a contract with Captain Buckingham to convey water to the building site, which, in accordance with the resolution of yesterday, he had prepared and had submitted to Captain Buckingham and to Colonel Totten ; both of whom had signified their approbation of it, and Colonel Totten had signed it.

It was approved and signed. It is as follows :

This agreement, made the fifteenth day of April, 1847, between Caleb Buckingham, of the city of Washington, of the first part, and the Building Committee of the Smithsonian Institution, of the second part, witnesseth :

That for and in consideration of the sum of six hundred and fifty dollars, to be by the party of the second part paid to the party of the first part, as hereinafter provided, the said party of the first part agrees to furnish all the necessary materials, of the best quality, and all the necessary work, to be done in the best and most substantial manner, to conduct the water from the fire plug at the engine-house, in Market square, in the said city, to the building about to be erected for the Smithsonian Institution, on the mall, between 9th and 12th streets. And the party of the first part agrees, that he will lay down a leaden pipe of inch-bore, and of the quality called “strong pipe,” at least two feet below the ground ; and he will furnish the same with a stop-cock of the best quality, at the end where the said fire plug is tapped ; and also a hydrant cock of the best quality at the end of the pipe next to the building. And the said party of the first part further agrees that he will convey the water across the canal in an iron pipe of two-inch bore, and of the best quality ; which iron pipe shall be sunk below the bed of the canal. And the said party of the first part agrees, that he will conduct the said leaden pipe so as to terminate at any point, not more than fifty feet from the foundations of the building, that may be pointed out by the architect or superintendent of the institution.

And the said party of the first part further agrees, that he will complete the laying of the said pipe, with its appurtenances, so that water can be used from the same one month from the date of this agreement.

And the party of the second part agree, that so soon as the said work shall have been completed to the entire satisfaction of the architect or superintendent of the said institution, and the said architect or superin-

tendent shall have certified that fact to the parties of the second part, the said parties of the second part will pay to the said party of the first part the above sum of six hundred and fifty dollars. In testimony whereof, the said party of the first part has hereunto set his hand and seal, and the said building committee, on behalf of the said institution, have hereunto subscribed their names, the day and year aforewritten.

C. BUCKINGHAM, [L. s.]

ROBERT DALE OWEN,
J. G. TOTTEN,
W. W. SEATON,
Building Committee.

The chairman presented from Mr. Randolph Coyle, city surveyor, a chart of the grounds belonging to the institution, crossed with lines of equal levels marked at each crossing of one hundred feet.

Ordered, That the above chart be preserved as a record of levels, by inserting it in the journal of the committee.

The chairman stated to the committee that he had waited upon the President, in accordance with the resolution of yesterday, and expressed to him the desire of the committee that he would consent to lay the corner-stone of the Smithsonian building; and that he, the President, has expressed his willingness to do so.

The chairman further informed the committee that the President stated to him that he (the President) would order the attendance of the marine band on the occasion.

The chairman stated to the committee that he had waited upon the Vice President, in accordance with a resolution passed yesterday, and that he (the Vice President) promised, if he could so arrange his business, to attend on the occasion of laying the foundation-stone of the Smithsonian building, and to deliver a brief address on that occasion.

And, on motion, the committee adjourned.

TWENTY-EIGHTH MEETING—APRIL 16, 1847.

Present, Messrs. Seaton and Owen.

The letter of Mr. Joel Downer, carpenter, dated April 8th, and submitted to the committee at their twenty-second meeting, coming up for consideration, Mr. Owen submitted a contract which he had prepared in accordance with the offer made by Mr. Downer for the erection of a temporary fence around the grounds of the Smithsonian Institution, and which he stated to the committee had been submitted to the superintendent and Mr. Downer, and had been approved by them.

The said contract was approved, and signed by the committee and by Mr. Downer, and is as follows:

This agreement, made the 16th of April, 1847, between Joel Downer, of the city of Washington, of the first part, and the Building Committee of the Smithsonian Institution of the second part, witnesseth:

That for and in consideration of the sum of four hundred dollars, to be by the party of the second part paid to the party of the first part, as hereinafter provided, the party of the first part agrees to fence in the lot or plat

of land belonging to the said Smithsonian Institution, and situated on that portion of the mall which lies between 9th and 12th streets, containing nineteen acres, or thereabout; the said fence to be made in the most substantial and workmanlike manner, and to be completed in one month from the date of this agreement. And the said party of the first part agrees that the said fence shall be of sawed paling, of the best quality that comes to the Washington market, each paling to be about three inches wide, and to be nailed on the rails with three nailings, and six nails to each paling, and the palings not more than two and a half inches apart.

And the said party of the first part further agrees, that the said fence shall have a bottom board averaging twelve inches in width, firmly nailed on, and the ground levelled up to the bottom of the same.

And the said party of the first part further agrees that the said fence shall be from five feet eight inches to six feet high, and that the posts shall be well and securely set in the ground, and that the fence shall stand, as nearly as convenient, on the boundary of the said lot, except on the north side; on which north side the fence shall be placed fifteen feet north of the boundary-line of the land of the said institution. And the said party of the first part agrees that he will furnish all the materials whatever for the said fence: *Provided, however,* That the posts and rails now standing on 12th street and on B street south may be used by the said party of the first part. *And provided further,* That in case the Commissioner of Public Buildings consent thereto, the posts and rails now standing on such portion of the mall as lies between 7th and 12th streets, and is not the property of the said institution, may also be used by the said party of the first part as part of the material of said fence.

And the party of the first part further agrees that he will leave openings for gates in said fence, at such points as may be pointed out by the contractor or superintendent; but no gates are included in this contract.

If there be not sufficient rails on the said lot between 7th and 12th streets, then the contractor, Mr. Dixon, will furnish the same to the party of the first part, as per annexed agreement.

And the party of the second part agree, so soon as the said fence shall be completed to the full and entire satisfaction of the architect or superintendent of the Smithsonian Institution, and that fact shall have been certified to the parties of the second part by the said architect or superintendent, that they, the said parties of the second part, will pay to the party of the first part, in full for said fence and material, the sum of four hundred dollars.

In testimony whereof, the said party of the first part has hereunto set his hand and seal, and the said parties of the second part, members of the said building committee, have hereunto, on behalf of the said Smithsonian Institution, subscribed their names the day and year aforewritten.

JOEL DOWNER, [L. s.]

ROBERT DALE OWEN,
JOS. G. TOTTEN,
W. W. SEATON,
Building Committee.

Agreement with Mr. Dixon, referred to in the foregoing contract.

If the old rails now standing on the mall between 7th and 12th streets be not sufficient to complete the fence around the grounds of the Smithsonian Institution, I hereby agree to furnish to Mr. Joel Downer, at my own cost, a sufficient number of good rails to make up the deficiency. I also agree to have made, at my expense, not less than two gates, at convenient points in said fence, to be hung on good and substantial gate-posts.

JAMES DIXON.

Mr. John P. C. Peter appeared before the committee, and reiterated in presence of the contractor, Mr. Dixon, his (Mr. Peter's) complete assurance, as formerly expressed in his letter, (page 121,) that there was in his Bull run quarry a sufficiency of rock to erect the buildings of the Smithsonian Institution, of a tint not darker than No. 19 of the specimens appended to Dr. Owen's report on the Potomac sandstones; a portion being of lighter tint. He was informed that the committee adhered to their decision not to use for the external walls any material darker than No. 19, but they did not object to some portions of the building being of a lighter shade. He was further informed that the architect, Mr. Renwick, and perhaps one of the committee, would shortly visit Bull run quarry, for the sake of ascertaining, by actual excavation and otherwise, whether the supply from the stratum in question was sufficient.

And, on motion, the committee adjourned.

TWENTY-NINTH MEETING--APRIL 17, 1847.

Present, Messrs. Seaton and Owen.

On motion of Mr. Seaton, it was

Resolved, That the Corporation of the city of Washington, the Independent Order of Odd-Fellows, the volunteer companies, and the citizens generally, be invited to join in the ceremony of laying the foundation stone of the Smithsonian Institution.

The chairman stated to the committee that he had consulted Mr. Drayton as to the actual size which the plates of the proposed volume on architecture might be made, so as to leave adequate margin; and that it was found that they might be *eleven inches by seven inches*, (or, if necessary, eleven inches by seven inches and a half.)

Mr. Owen stated to the committee that he had written to Mr. Renwick, instructing him to cause the perspective views of the Smithsonian Institution to be of that size.

The chairman submitted an inscription, prepared by the superintendent, for a plate to be placed under the corner-stone of the Smithsonian building.

It was adopted, and is as follows:

Inscription for the foundation-stone of the Smithsonian Institution.

On the first day of May, 1847, was laid, in the city of Washington, this foundation-stone of a building to be appropriated for the
Smithsonian Institution;

FOUNDED BY BEQUEST OF JAMES SMITHSON, OF GREAT BRITAIN.

JAMES K. POLK, *President of the United States.*

Corporation.

President of the United States.
 Vice President of the United States.
 Secretary of State.
 Secretary of the Treasury.
 Secretary of War.
 Secretary of the Navy.
 Postmaster General.
 Attorney General.
 Chief Justice.
 Commissioner of Patents.
 Mayor of the city of Washington.

Officers.

George M. Dallas, *Chancellor*.
 W. W. Seaton, Chairman, }
 Jos. G. Totten, } *Executive Committee*.
 Robert Dale Owen, }
 Joseph Henry, *Secretary*.
 Charles C. Jewett, *Assistant Secretary*.

Board of Regents.

George M. Dallas, Vice President.
 Roger B. Taney, Chief Justice.
 W. W. Seaton, Mayor of the City.
 Lewis Cass, U. S. Senator.
 Sidney Breese, U. S. Senator.
 James A. Pearce, U. S. Senator.
 Robert Dale Owen, U. S. Representative.
 Wm. J. Hough, U. S. Representative.
 Henry W. Hilliard, U. S. Representative.
 Rufus Choate, Massachusetts.
 Richard Rush, Pennsylvania.
 Gideon Hawley, New York.
 Wm. C. Preston, South Carolina.
 A. Dallas Bache, National Institute.
 Jos. G. Totten, National Institute.

Building Committee.

Robert Dale Owen, Chairman.
 Jos. G. Totten.
 W. W. Seaton.

James Renwick, jr., *Architect*.
 Robert Mills, *Assistant Architect and Superintendent*.

On motion of Mr. Owen, it was

Resolved, That the superintendent be authorized to contract for the engraving of said plate, at an expense not exceeding fifteen dollars.

And, on motion, the committee adjourned.

THIRTIETH MEETING—APRIL 19, 1847.

Present, Messrs. Seaton and Owen.

The chairman laid before the committee, from Dr. Owen, the following communication relative to details of arrangements in the laboratory :

AUGUST 17, 1847.

GENTLEMEN: Several details connected with the arrangement of the laboratory of the Smithsonian Institution have recently occurred to me, or been suggested by conversation with gentlemen experienced in chemical manipulation. I place them at your disposal, in case you may see fit to adopt all or any of them.

I advise that the sliding doors between the laboratory and lecture-room be of sheet copper, blackened, so that they may serve as black boards for the purpose of illustration.

Pulleys in the ceiling of the laboratory, behind the lecturer's table, will be found very convenient to suspend illustrations, so that they can be raised or lowered. Black boards of blackened sheet copper or iron, in nests or sets to slide one behind the other, will be found extremely useful to the lecturer, thus suspended by pulleys.

The floor of the laboratory may advantageously be covered with thick sheet zinc.

The roof of the laboratory is best covered with slate, as the rain-water caught from a slate roof is purer than from a metal one.

The tops of all the tables in the laboratory, including the narrow tables below the shelving, should be of serpentine, and from one to two inches thick. Serpentine can be procured from Proctorsville, Vermont. Even the tops of the tables to hold the balances are best of this material. It is not acted upon by acids; that is, the Vermont variety.

The flues of the furnace over the hot air chambers should be of half-inch soapstone slabs.

There should be in the basement, gasometers for hydrogen or carburetted hydrogen—very convenient in organic analyses.

The air should be admitted above the ash-pits in the cellar; for if it be not, the ashes blow up with the draught.

The furnace flues should all be smoothly plastered inside, especially those of furnaces to raise high temperature. For such furnaces Dr. Jackson, of Boston, recommends flues tapering from below upwards, the larger flues being a little over 12 inches in the basement, and tapering to nine inches at top; and the area at top being somewhat greater than that of the flue throat next the furnace. He is of opinion that by this form of flue, the *lateral* currents of cool air that usually pass down chimneys are prevented, and thus all the cold air must pass through the furnace. I have tried the plan, and they draw well.

It is unnecessary to line the flues with fire brick, except at the throat leading from the furnace.

Every table, both in the laboratory and in the working laboratory, should be furnished with a blast pipe, proceeding either from a large bellows in the basement, or a small bellows fixed under the table, or a condensing syringe.

If, in the course of the erection of the Smithsonian laboratory, I can be of any service in furnishing further details, I shall do so with pleasure, if written on the subject; and to avoid misapprehension, I may add, without any charge to the institution.

I regret that my occupation as geologist of Wisconsin is likely to take me to so great a distance from your city, that I shall have little chance to aid by personal supervision, as otherwise I should have been happy to do.

Respectfully submitted, by

DAVID DALE OWEN.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

On motion, the above communication was referred to the architect of the institution.

Mr. Renwick, the architect, appeared before the committee, and stated that it was probable that plates of Grace church, and of Trinity, could be procured, if he (the architect) were authorized, by resolution of the committee, to make application for the same.

On motion of Mr. Owen, the following preamble and resolution were adopted:

Whereas it has been represented to this committee that some members of the vestry of Trinity church, New York, have liberally expressed their willingness to furnish to the Smithsonian Institution a plate on steel or copper, containing a perspective view of Trinity church, to be printed in the forthcoming volume on Public Architecture, about to be published by this committee: Therefore,

Resolved, That Mr. James Renwick, architect of the Smithsonian Institution, be and he is hereby authorized, on behalf of the said institution, to state to the said vestry that if they decide to furnish said plate, it will be accompanied in the said volume with a description of Trinity church, as exhibiting the best example in the United States of the style of architecture in which it is erected; and that the building committee, if thereto required by the above vestry, will furnish to them, at any time, as many impressions from the said plate as they may desire, at the cost of paper and printing.

And, on motion, the following additional preamble and resolution were adopted:

Whereas it has been represented to this committee that some members of the vestry of Grace church, New York, have liberally expressed their willingness to furnish to the Smithsonian Institution a plate on steel, containing a perspective view of Grace church, to be printed in the forthcoming volume on Public Architecture, about to be published by this committee: Therefore,

Resolved, That Mr. James Renwick, architect of the Smithsonian Institution, be and he is hereby authorized, on behalf of the said institution, to state to the said vestry that if they decide to furnish said plate, it will be accompanied in the said volume with a description of Grace church, as

exhibiting the best example in the United States of the style of architecture in which it is erected, and that the building committee, if thereto required by the above vestry, will furnish to them, at any time, as many impressions from said plate as they may desire, at the cost of paper and printing.

And, on motion, the committee adjourned.

THIRTY-FIRST MEETING—APRIL 20, 1847.

[Held at the office of Mr. Totten.]

Present, Messrs. Totten, Seaton, and Owen.

The architect appeared before the committee, and the various specifications, especially those connected with the foundations of the building, having been revised, the following items in regard to the same were agreed to:

That the concrete, as given in the specifications, is unnecessarily rich in mortar, and that about 14 parts of stone or brick fragments to 2 of dry cement, and one of lime paste, and eight of sand, is a suitable composition.

That the concrete under the foundation be laid in two steps, and in six-inch courses.

That a bench mark be set up in some convenient spot in the vicinity of the building, for permanent reference.

That when the foundations are excavated, they be tried with a rammer; and if any impression be produced, that the bottom be thoroughly rammed.

That the architect ascertain from the contractor, and report to the committee, what sum would be saved by substituting two-inch furring and lathing for the brick lining wall; the flues being sunk to a sufficient additional depth in the wall.

That a pattern of the jamb of one window, and of such other portions of the cut-work of the building as may be designated by the architect, be prepared as a sample; and, after being approved, be preserved for reference.

On motion of Mr. Owen, the following preamble and resolution were adopted:

Whereas it has been represented to this committee that one of the partners of the firm of Alexander T. Stewart & Co., of New York, has signified the probability that the said firm might supply an elevation, on steel or copper, of the front of their marble store in Broadway, to insert in the volume on Public Architecture about to be published by this committee: Therefore,

Resolved, That Mr. James Renwick, architect of the Smithsonian Institution, be and he is hereby authorized, on behalf of the said institution, to state to Messrs. Stewart and Company, that if they decide to furnish said plate, it will be accompanied in the said volume with a description of their store, as exhibiting the best example in the United States of street architecture in the modern Italian style; and that the building committee, if thereto required by Messrs. Stewart and Company, will furnish to them, at any time, as many impressions from the said plate as they may desire, at the cost of paper and printing.

The committee then adjourned to the building site belonging to the ill-

stitution, where they found the excavation for the foundations of the east or chemical wing commenced, examined the character of the ground, as shown in a square trench dug for the purpose of ascertaining its character; and decided, that the foundations as specified in the contract were sufficient.

The committee then returned to the City Hall; and, on motion, adjourned.

THIRTY-SECOND MEETING—APRIL 21, 1847.

Present, Messrs. Seaton and Owen.

The chairman laid before the committee, from the president of the Chesapeake and Ohio Canal Company, the following letter, received to-day:

FREDERICK, *April 20, 1847.*

DEAR SIR: As promised in my former letter, I laid your proposal for the reduction of the toll on stone for the use of the Smithsonian Institution before the board of president and directors of the Chesapeake and Ohio Canal Company, at their meeting on the 10th inst., and now apprise you that, whilst the board entertain the best wishes for the success of the great undertaking you have in charge, they yet feel constrained to decline making the reduction suggested.

As I mentioned in my letter to you, the cost of transportation on the canal, estimating the toll by the perch, as is the practice on our canal, is at present much less than the rival improvement you allude to, and I hope this consideration will suffice to determine you in favor of the Seneca quarries.

With great respect, yours, &c.,

J. M. COALE,
President of the Chesapeake and Ohio Canal Co.

On motion, the letter was referred to the contractors, Messrs. Hixon and Cameron.

The chairman stated to the committee that he should set out to-morrow morning for the west; but if, at any time during the summer, his presence should become necessary on the committee, he would endeavor to return at as short a notice as possible.

And, on motion, the committee adjourned.

THIRTY-THIRD MEETING—MAY 1, 1847.

Present, Messrs. Seaton and Totten.

On motion, it was

Resolved, That William Beverly Randolph be appointed marshal-in-chief during the ceremonies of the day.

And then, this being the day appointed to lay the corner-stone of the building destined to be occupied as the Smithsonian Institution the committee adjourned to join in its ceremonies; of which the following description is extracted from the National Intelligencer:

“Early in the morning the banners in front of the City Hall and at other public places gave indication of a holyday and a day of public rejoicing. At nine o’clock the volunteer companies, under the command of

Captain Tucker and Lieutenant Tate, were formed at their respective parade grounds, near the City Hall. At about the same hour the cars arrived from Baltimore, bringing hither a large delegation of the Free Masons of Baltimore and Philadelphia, to unite with their honored brethren in this District in the grand and interesting ceremonies of laying the foundation of an institution whose object is the 'increase and diffusion of knowledge among men.'

"At ten o'clock the members of the various lodges of Free and Accepted Masons of the District united with the delegations from Maryland and Pennsylvania, and took the station assigned them in the order of the procession by the marshal-in-chief Beverly Randolph, esq., who appeared, as most of the assistant marshals, in appropriate badges. The masonic part of the procession was unusually grand. We never witnessed so numerous a turn out in this city of that ancient and respectable fraternity, who embrace in their body, persons of every condition in life and of all countries. The Philadelphia delegation, headed by Colonel James Page, Grand Master of Pennsylvania; the Baltimore delegation, headed by Charles Gilman, esq., Grand Master of Maryland; and the Washington, Georgetown, and Alexandria delegations, headed by B. B. French, esq., the popular Grand Master of the District of Columbia; all these functionaries, and several other officials whose names we do not know, with the long line of members in full regalia, with their splendid banners and emblems, presented a very interesting and imposing spectacle.

"Not less so the very numerous and respectable body of the Independent Order of Odd Fellows, comprehending many of the lodges of this District. The Odd Fellows, by their number, splendid regalia, banners, emblems, excellent music, and rich costume, added greatly to the imposing appearance of the interesting pageant. Dr. W. B. Magruder, splendidly decorated, acted as grand marshal of the Odd Fellows, whose chief officers are Dr. Joseph Berrows, Grand Master, and Dr. Flodoardo Howard, Deputy Grand Master, who appeared in their proper places, supported by other prominent officers and members of the Order.

"The procession (formed agreeably to the programme of the day) moved from the City Hall to the President's House about 11 o'clock. The marshal-in-chief and his aids were all on horseback, and wore white scarfs and blue rosettes. Three bands of music accompanied the procession, which was more than a mile in length. Of the music we cannot avoid saying, that it was excellent. The marine band is uniformly so. The national brass band, recently formed under Mr. Massoletti, played admirably. Garcia's band, from Alexandria, attracted particular attention by its excellent performances. This band, being uniformed, was taken by several persons for Deem's celebrated Baltimore band; a great compliment, truly.

"The column moved down 4½ street to Pennsylvania avenue, then up the avenue to 7th street, up 7th to E, up E to 11th, up 11th to F, and thence on F to the presidential mansion, where the President, heads of departments, diplomatic corps, &c., were received into the line. The entire column then moved by Pennsylvania avenue and 12th street to the site of the Smithsonian Institution.

"The military was then formed in line on the south side of the site, and the President, heads of departments, diplomatic corps, Regents, mayor and corporation of Washington, &c., passed in front, receiving

their salute, and repaired to an elevated platform erected for the occasion near the corner-stone, and beautifully arched and decorated with festoons and wreaths of flowers and evergreens.

"The column then opened to the right and left, and the masonic bodies, preceded by the Grand Master of the District of Columbia, passed up the line to the corner-stone.

"The masonic ceremonies were then performed, for the details of which we are indebted to an official source, as follows:

"Proclamation for silence having been made by the Grand Marshal—

"B. B. French, esq., the Grand Master, accompanied by James Page, esq., the Grand Master of the Grand Lodge of Pennsylvania, and Chas. Gilman, esq., the Grand Master of the Grand Lodge of Maryland, took his stand at the corner-stone, and, having announced the object of the meeting, called upon the Grand Chaplain of the Grand Lodge of Maryland, brother McJilton, to address the Throne of Grace, which he did as follows :

"PRAYER.

"O Lord God of nations! There is none like thee in heaven nor in earth ; which keepeth covenant, and showeth mercy unto thy servants that walk before thee with all their hearts. 'Thou hast kept with thy people that which thou has promised them in all generations ; and that which thou hast spoken with thy mouth thou hast fulfilled with thy hand even unto this day. (2 Chron. vi, 14, 15.) As thou didst with thine ancient people Israel, of small beginning, thou hast raised up a mighty nation in this western world. By thy power it has prospered ; by thine arm it has been begirt with strength ; by thine hand it has been overstrewn with blessings.

"Few in number and feeble in strength our fathers came upon these shores. They hewed themselves a home in the wilderness, and sat down weary and toilworn amid the wilds of the forests. But they abode beneath the shadow of the Almighty. (Ps. xci, 1.) Thou wast to them as rivers of water in a dry place, and as the shadow of a great rock in a weary land. (Isa. xxxii, 2.) Thou gavest them rain in season. The land yielded her increase, and the trees of the field yielded their fruit. The threshing reached unto the vintage, and the vintage to the sowing time. They did eat their bread to the full, and dwelt in the land in safety. When their enemies rose against them, thou wast the shield of their defence. In thy strength they had power to overcome, and their foes fled before them. Thou gavest them independence and peace, and madest them to lie down in safety, with none to make them afraid. 'Thou didst set up thy tabernacle among them ; thou didst break the bands of their yoke, and made them to go upright and free. (Lev. xxvi.)

"Thy second Israel has been greatly blessed at thy hands. Thou hast given her plenty of corn and wine. Thou hast made peace in her borders, and filled her with the finest of the wheat. Thou hast strengthened the bars of her gates, and blessed her children within her. (Ps. cxlvii, 13, 14.) Thou hadst respect unto our fathers. 'Thou madest them to be fruitful, and didst multiply their prosperity. 'Thou didst establish thy covenant with them. Under thy fostering care the land became the heritage of freedom, the asylum of the oppressed, the home of the stranger, a blessing to the nations. The gloomy clouds of ignorance and

superstition are resting darkly upon other lands ; but the sun of enlightenment and religion is beaming brilliantly upon ours. The shackles of civil bondage are binding the nations of the East, and they bow in their captivity to the despot's iron rule ; but no fetters of oppression bind the free of this favored land. Civil discord has reared its hydra head, and rent asunder the bond that united other States, but ours is unharmed, and no enemy appears that has power to sever it. The pestilence with fearful step has trodden other shores, and desolation fierce and fell has marked its direful way ; but the rude form of the ravager has not reached our favored clime, and the trail of his burning footstep is not found upon our soil. The famine has marred the beauty of a sister land, and the shrill cry of the suffering still rises from the soil that is made desolate by its terrible tread ; but our barns are yet full of the harvest's yield. We have enough and to spare. While the oppressed can find a home of happiness in our wide domain of liberty, we have bread for the starving, and our ships are bearing it to the sufferers beyond the seas. Truly the Lord has been good to us. He has remembered us in mercy ; he has rewarded us beyond our deservings.

“ And now, O Lord God of nations, that hast so highly favored and so greatly prospered the people of this land, hear thou in heaven, thy dwelling place, the cry and the prayer of thy servants when they pray before thee, that thy fatherly care and protection may be continued over us ; that thy power may still be our prosperity, thine arm the girdle of our strength, thy hand the security of our blessing.

“ Let thy mercy cover our sins ; for we must acknowledge that, like lost sheep, we have erred and strayed from thy righteous ways. We have departed from the path of thy holy commandments, and we have done evil in thy sight. Give us true repentance for our many and grievous offences. Overrule the rebellion of our hearts, and the disobedience of our lives, by the interposition of thy abounding mercy, and let not our guilt be visited in merited vengeance upon us.

“ May we never, either in word or deed, deny the Lord, nor neglect his sacred worship. But may his blessed name, his doctrine and worship, be so inwoven with our institutions of freedom, that the names of American and Christian may ever be one and inseparable. As a nation, as well as individuals, may we spurn the creeds of infidelity, and in the acknowledgment of the Divine authority supplicate the overruling providence of God, remembering always that it is He that maketh us to differ from others, and that crowneth us with mercy and loving kindness.

“ Grant us wisdom, and purity, and integrity of purpose, that we may preserve unhurt the inheritance of freedom that our departed sires have bequeathed us. May it be nothing impaired, nothing dimmed, but strengthened and brightened by our having used it and enjoyed its blessings. And may we deliver it to the succeeding generation as spotless as we received it ; as beautiful, as rich a treasure, as it came to us, drenched in the blood and crowned with the victorious bays of two fierce ensanguined wars.

“ In the day of battle thou hast been our defence, and our enemies have not triumphed over us. In the face of our foes thou hast ‘ redeemed us from the sword,’ (Job, v. 20,) and no weapon formed against us has prospered. So be it ever, when the hand of dishonor shall assail us, or the rod of the oppressor be uplifted to our hurt.

“ In peace may we possess our territory. Do thou make the shout and

the noise of the battle to cease from our shores, and may friendship, and love, and righteousness prevail. Make us to know that wisdom is better than weapons of war, and a peaceful heritage than much spoil. May the spear of the warrior be speedily exchanged for the plough and the pruning-hook, and the dread thunder of battle for the shout of thanksgiving to God.

“ Guide us ever in the choice of our rulers, that the wisdom and virtue of the nation may appear in the characters and deeds of those who may be honored with majestic distinctions. May the praise which is sounded by thy Church be echoed from the high places of the republic, and reflected from the multitudes of the people, until, like the rushing of many waters, the voice shall go forth proclaiming the Lord Omnipotent to be our God. And in the pursuits of our lives, in the expressions of our lips, and in our daily worship, may we prove that we know no other God but him.

“ With thy favor we beseech thee to behold and bless thy servant the President of the United States, and all others in authority, and so replenish them with the grace of thy holy spirit, that they may always incline to thy will and walk in thy way. Teach thou our Senators wisdom, that they may establish such laws as are wholesome and good. Direct thou the minds of our judges, that they may decree justice, and that their judgments may be rendered with equity. Incline the people with a spirit of patriotic devotion, and enlighten them with heavenly wisdom, that they may be zealous of their country’s honor, and exercise with prudence the fearful trust of freemen which is committed into their hands. Make us a people fearing thee and honoring thy most holy name: loving each other as brethren, and living for the good of mankind.

“ We invoke thy blessing upon this present undertaking of thy servants. Grant that the structure here commenced under the eye, and, we trust, by the direction of thy Providence, may be reared up in thy name, and redound to thy glory. May the building here to be erected as a depository of the curious works of art and nature, and emblems of national distinction, be more than sufficient for this worthy and honorable purpose. May it become a monument of usefulness to us as a nation, and a matter of admiration to the nations of the world. In the deposite of national symbols, may it be a central point of peace and friendship for the kingdoms and governments of the earth. And may the nations which shall be represented in its halls find themselves in union, firmly bargued for the encouragement of national prosperity, the promotion of art and intelligence, and the increase of human happiness. May it be as a central sun of science, about which systems may revolve, and from which light and knowledge may be reflected throughout every clime and kingdom of the globe. And, in the accomplishment of these great and important results, may the blessings of the nations follow the memory of the projector, and America become the almoner of a bounty whose benefits shall not cease to flow until time shall be no more.

“ In all our civil and domestic relations may we remember our religious duties, and contribute of our means and services and characters to the increase of thy Church, and the advancement of thy glory: that we may be a people truly serving thee, honoring thy name in our walks and works of righteousness, and in the possession of happiness under thy smiles and favor.

“ Let thy priests, O Lord, be clothed with righteousness, and thy saint:

rejoice in goodness. (2 Chron. vi. 41.) Let thy way be known in all the earth, thy saving health among all nations.

“Grant that the course of this world may be so peaceably ordered by thy governance, that thy Church may joyfully serve thee in all godly quietness; that thy people may walk in the ways of truth and peace, and at last be numbered with thy saints in glory everlasting.

“Hearken, O Lord God, we beseech thee, to the prayers and supplications which we have now presented before thee. And let it be thy good pleasure to grant us our requests, which we offer in the name and through the merits of thy son Jesus, and our Lord, to whom, with thee and the Holy Ghost, be all honor and glory: world without end. Amen.

“There was then deposited in a cavity in the corner-stone a leaden box, containing the following articles, viz:

“The gold and silver coins of the United States; report of the Committee on Organization; Constitution of the United States; the New Testament; Declaration of Independence; Congressional Directory for 1847; bulletins of the National Institute; report of the first National Fair at Washington; report of the United States agent appointed to receive the legacy of James Smithson; medal portrait of James Smithson; reports of the Commissioner of Patents; journal of the proceedings of the Board of Regents, 1846; an engraved plate, with the following inscription:

“On the 1st day of May, 1847, was laid, in the city of Washington, this

“foundation-stone of a building to be appropriated

“for the Smithsonian Institution;

“FOUNDED BY BEQUEST OF JAMES SMITHSON, OF GREAT BRITAIN.

“JAMES K. POLK, *President of the United States.*

“*Corporation.*

“President of the United States.

“Vice President of the United States.

“Secretary of War.

“Secretary of the Treasury.

“Secretary of State.

“Secretary of the Navy.

“Postmaster General.

“Attorney General.

“Chief Justice.

“Commissioner of Patents.

“Mayor of the city of Washington.

“*Board of Regents.*

“George M. Dallas, Vice President.

“Roger B. Taney, Chief Justice.

“W. W. Seaton, Mayor of the City.

“Lewis Cass, United States Senator.

“James A. Pearce, United States Senator.

“Robert Dale Owen, United States Representative.

“William J. Hough, United States Representative.

“Henry W. Hilliard, United States Representative.

- “ Rufus Choate, Massachusetts.
- “ Richard Rush, Pennsylvania.
- “ Gideon Hawley, New York.
- “ William C. Preston, South Carolina.
- “ A. Dallas Bache, National Institute.
- “ Joseph G. Totten, National Institute.

“ *Officers.*

- “ George M. Dallas, *Chancellor.*
- “ W. W. Seaton, }
- “ Joseph G. Totten, } *Executive Committee.*
- “ Robert Dale Owen, }
- “ Robert Dale Owen, }
- “ Joseph G. Totten, } *Building Committee.*
- “ William W. Seaton, }
- “ Joseph Henry, *Secretary.*
- “ C. C. Jewett, *Assistant Secretary.*
- “ James Renwick, jr., *Architect.*
- “ Robert Mills, *Assistant Architect and Superintendent.*
- “ James Dixon and Gilbert Cameron, *Contractors.*

“ The address of the Chancellor of the institution on laying the corner-stone; astronomical observations made at the National Observatory; a copy of the Directory of the city; the city newspapers of the day.

“ There was also deposited in the same cavity, by the Free Masons, a leaden casket containing the following articles, viz:

“ An elegant copy of the Holy Bible, presented by the Rev. Charles A. Davis, on behalf of the Bible Society of Washington; a stereotype page of Bancroft's History of the United States; Constitution of the Grand Lodge of the District of Columbia; an impression of its seal in metal; a copy of its proceedings for 1846; a silver plate, inscribed with the names of the Grand and subordinate lodges of the District.

“ The Grand Master then applied the square, level, and plumb, and pronounced the stone properly squared, duly laid, *true and trusty.*

“ He then proceeded to place upon the stone the corn, wine, and oil, preceeding this ceremony by an appropriate explanation of their symbolic meaning, concluding his remarks by the following quotation from the venerable Harris: ‘Wherefore, brethren, do you carry corn, wine, and oil in your procession, but to remind you that, in the pilgrimage of human life, you are to impart a portion of your bread to feed the hungry, to send a cup of your wine to cheer the sorrowful, and pour the healing oil of your consolation into the wounds which sickness hath made in the bodies or affliction rent in the hearts of your fellow-travellers.’

“ Upon pouring the *corn* upon the stone, the Grand Master said: ‘I do this, expressing a hope that the hearts of those who are charged with carrying into effect the intentions of the generous donor whose legacy has established the Smithsonian Institution, may be strengthened in the performance of all their duties.’ In pouring thereon the *wine*, the Grand Master said: ‘May the Regents of this institution, and all connected therewith, be cheered onward and rejoice in the success of all their measures connected with the erection of this building and with the government of

the institution.' In pouring the *oil* upon the stone, he said: 'May harmony, peace, and brotherly love prevail among all connected with the Smithsonian Institution, and may they witness the placing of the cap-stone of the complete edifice under circumstances as propitious as those which attend the present ceremonies.'

"The Grand Master then informed the assembled multitude that he held in his hand the identical gavel used by the immortal Washington in conducting the masonic ceremonies upon laying the corner-stone of the Capitol of these United States—this happy and glorious Union, which had now so greatly extended, and was still extending, so that no man could foresee its magnitude or its power. He also stated that he had the honor then to wear an apron worn upon the same occasion by the Father of his Country, which was presented to Washington by the Grand Lodge of France, through that great and good patriot and mason, General Lafayette. This apron, he said, had been in possession of Mount Nebo Lodge, of Shepherdstown, Virginia, for many years, and that that lodge had kindly delegated a brother, S. McElroy, esq., to bear the apron to this city, and to present it to the Grand Lodge, with a request that it be worn by the Grand Master on this occasion, which he had done at the meeting of this morning.

"The Grand Master then gave three raps upon the stone with the gavel of Washington, the masonic brethren present gave the grand masonic honors, and the masonic ceremonies were concluded.

"Mr. Dallas, the Chancellor of the Board of Regents, then rose and delivered the following

" ADDRESS.

"*Friends and fellow-citizens:* It has been deemed proper, that, at a ceremony so interesting as the present to the Smithsonian Institution, its chief officer should make to you a few general remarks explanatory of its origin, its purposes, its plans, and its prospects. Let me, therefore, ask your attention while I undertake that duty.

"The Congress of the United States, by an act passed on the 10th of August last, organized '*an establishment*,' through the instrumentality of which to apply faithfully to its directed objects a legacy of five hundred thousand dollars, received by our government under the will of a philosophic and benevolent Englishman. This '*establishment*' is composed of our highest public functionaries for the time being: the President, the Vice President, the Chief Justice, and the Heads of the six Executive Departments, with the Commissioner of the Patent Office and the Mayor of Washington; and, as the active council of management, a board is created of fifteen, known in the act by the scholastic name of '*Regents*,' one-fifth of them chosen by the Senate, another fifth by the House of Representatives, and of the remainder, two-fifths, by the joint action of both legislative chambers. It is to accommodate this imposing agency, to give it permanent and suitable means with which to effectuate its important and various purposes, and to shelter as well as exhibit its collections and property, that Congress enjoined to be erected, 'of plain and durable material and structure, without unnecessary ornament,' the edifice whose corner-stone you have seen deposited.

"James Smithson, a Londoner born, and claiming to be the son of a

distinguished nobleman, gave his life exclusively to intellectual pursuits, and especially to researches in physical and experimental science. Supplied with larger means than his wants required, and steadily practising a strict scheme of personal economy, he amassed considerable fortune. He died at Genoa in 1829, and, by his will, bequeathed his accumulated property to this Union—a country that, notwithstanding his frequent change of abode, he had never visited, whose citizens he had never associated with, but in whose inevitable future he saw the most solid ground on which to cast the anchor of his fame. This legacy, for some time the subject of litigation in the British Court of Chancery, was finally secured, brought over, and received into the treasury of the United States on the 1st of September, 1838. Its exact amount, when deposited, was five hundred and fifteen thousand one hundred and sixty-nine dollars.

“The legacy was accompanied by a declaration of its design; and the execution of that design has been assumed, as well by an acceptance of the money, as by several open and formal avowals by our government. It was to ‘*found an institution at Washington for the increase and diffusion of knowledge among men* ;’ to found, not an academy, not a college, not a university, but something less technical and precise, something whose import and circuit should be bolder and more comprehensive; an institution not merely for disseminating, spreading, teaching knowledge, but also, and foremost, for creating, originating, increasing it. Where at? In a city whose name recalls the wisest, purest, and noblest spirit of the freest, newest, and broadest land. And among whom? Not a chosen or designated class—not the followers of a particular sage or sect—not the favorites of fortune, nor the lifted of rank; but among *men*—men of every condition, of every school, of every faith, of every nativity. *Men!* It was with a purpose thus elevated and expansive, thus as well distinct as indiscriminating, that James Smithson committed his wealth to the guardianship of the American republic. Whatever may be the difference of opinion as to the comparative merits of the many modes of practically realizing this purpose, it is quite certain that the good faith and best exertions of our country are solemnly pledged to its fulfilment. We must try it—try it sincerely, indefatigably, trustworthily—try it through all the diversified and promising channels—try it with no morrow exclusiveness of choice or prejudice as to systems, sciences, or arts. The intention of the benefactor was to make his endowment a perennial fountain of wisdom, as well practical as theoretic or imaginative, whose living waters should be unceasingly distributed to advance the intelligence, comfort, and happiness of human beings.

“When, at no distant day, I trust, it shall be seen that within the walls of this building the truths of nature are forced by persevering researches from their hidden recesses, mingled with the stock already hoarded by genius and industry, and thence profusely scattered, by gratuitous lectures or publications, for the benefit of all; when it shall be seen, that here universal science finds food, implements, and a tribune—art her spring to invention, her studio, and her models; and both shall have throngs of disciples from the ranks of our people, emulous for enlightenment or eager to assist—then the condition of our legacy will have been performed, and the wide philanthropy of Smithson have achieved its aim!

“As a beginning to the plan for effecting a result so interesting, Congress have deemed and declared the erection of a large and commodious

edifice indispensable. The Board of Regents were, by the legislative charter, instructed to select, as soon as they were organized, a site, and to cause a structure to be reared, and that structure to make 'of sufficient size, and with suitable rooms or halls for the reception and arrangement, upon a liberal scale,' *first*, of objects of natural history, including a geological and mineralogical cabinet; *second*, of a chemical laboratory; *third*, of a library; *fourth*, of a gallery of art; *fifth*, of the necessary lecture-rooms; and, *sixth*, of the national cabinet of curiosities and relics, now poorly and partially accommodated in the upper story of the Patent Office. It is the first duty of the Regents to obey the unequivocal behests of Congress, to carry them out faithfully on the scale and in the spirit they obviously import; and to let their measures flow, not from their own discretion, but from the provisions of the law which they are empowered to execute. I say this in explanation of the dimensions which the building must necessarily take. It is consecrated to the various and boundless objects that tend to 'increase and diffuse knowledge.' It is designed to participate, as a satellite, in the duration and march of our glorious Union, to be the depository of all the rare productions of nature and art which centuries may gather, and to throw open halls sufficiently ample to contain the knowledge seeking masses of our countrymen. Congress have stamped this character upon it, by prescribing and appropriating its vast interior compartments, and by other positive expressions of their will.

"To conform strictly to instruction, and yet keep within the pecuniary limits assigned to them; to provide the space called for, and yet avoid even the appearance of unnecessary expansion; to combine solidity with architectural beauty, and wholesome ventilation, and to satisfy at once true taste and stern economy by banishing useless embellishment, were aims always controlling and uppermost with the Regents. How far they have succeeded, time will show, and must be left to the candor of public opinion. Not doubting that the experienced and reliable contractors for the work will accomplish their undertaking, in all its details, with exactitude and fidelity, I may venture to give you an anticipation in brief of the building whose first stone is now laid.

"Its exterior will present a specimen of the style of architecture that prevailed some seven centuries ago, chiefly in Germany, Normandy, and southern Europe, which preceded the Gothic, and continues to recommend itself, for structures like this, to the most enlightened judgment. It is known as the Norman, or, more strictly speaking, the Lombard style. It harmonizes alike with the extent, the grave uses, and the massive strength of the edifice; it exacts a certain variety in the forms of its parts; and it authorizes any additions that convenience may require, no matter how seemingly irregular they may be.

"It will extend, east and west, an entire front of four hundred and twenty-six feet, having a central building of fifty by two hundred feet in the clear inside, with two towers; two wings of unequal fronts, the east one forty-five by seventy five feet in the clear inside, with a vestibule and porch attached to it; the west one thirty-four by sixty-five feet in the clear inside, with a northern semicircular projection. These wings will be connected with the central building by two ranges sixty feet in length in the clear inside. It will have a central rear tower, and other towers of different heights, sizes, and characters, two of them placed in the wings. All these numerous towers are essential to arrangements within, as flues,

stairways, ventilators, and detached rooms; and are of different heights, varying from sixty to one hundred and fifty feet.

“The first story of the central building will be occupied by the library, the chief lecture-room, and the principal hall; the second story by the museum. The laboratory and chemical lecture-room will occupy the east wing; the gallery of art the western wing and western connecting range. The chosen material is a freestone of a lilac-gray color, drawn from a quarry on the banks of the Chesapeake and Ohio canal, near Seneca creek, and twenty three miles from this spot.

“It is gratifying to me to be able to accompany this imperfect sketch with the statement, that the entire pile is to be finished, and furnished, and fitted up, for a sum less, by thirty-seven thousand dollars, than the one set apart by Congress as applicable to the building alone.

“How best to put this Smithsonian Institution in progress; to give it definite character and views; to shape its line of march as Congress has either ordered or intimated that it should be, and to let the testamentary purpose be apparent in all its operations, was a task on which ability and much consultation have been expended. There were, I may almost say, necessarily, and of course there were on this cardinal point, great diversities of sentiment and construction, as there had been during the masterly debates which prefaced the passage of the law. What constituted ‘*knowledge*,’ in the sense of Smithson’s bequest? In what manner shall its ‘*increase*’ be provided for? By what method shall its ‘*diffusion*’ be sought? Should the developments of the laboratory be more engrossing than the stored resources of the library? Will oral expositions or printed treatises be preferable? Are permanent professorships to be systematized, or temporary teachers to be enlisted? In fine, what should be the instruments and the orbit of an establishment whence the light of knowledge was required constantly to radiate among men?

“They to whom was confided the resolution of these problems into practical measures, have felt the weight and delicacy of their mission. They began by profoundly studying the subject in its several aspects. They cherished with ardor, and discussed with freedom, their respective projects. The conflicts of upright minds, however, rarely fail to end in mutual concession and compromise; and thus scarcely a single measure was adopted except by unanimous concurrence. The Regents have submitted their labors and conclusions to the country—the report of their proceedings was duly made for legislative supervision; and may they not confidently hope for (what they know nothing of theirs can succeed without) the co-operation and sympathy of the American people?

“There are some results to be anticipated from the success of the institution, which, though not as obvious as others, are nevertheless such as no sound American heart can wholly disregard, and which it may not be misplaced to glance at. That we shall fulfill, in the presence of watchful civilization, an admitted obligation, and that the common mind of our country, on which the permanency of its liberties so closely depends, will be exalted and invigorated, are considerations abundantly strong to rally us all to the manly effort. No greater shame, and no greater loss can readily be incurred, than would be consequent on ignoble failure. But may it not be justly said, that the mild and genial influence of this establishment will strengthen and tighten the cords of our Union, and give to the capital of that Union a new charm, with greater stability?

"The Smithsonian design is, as I have already suggested, a peculiar one. It cannot, as a scene of educational training, have any pretensions or provoke any jealousies. It is no rival of the many admirable schools which adorn the respective States, and can in no manner intrude upon their spheres of action. Yet it will be a factory and a storehouse of knowledge, accessible to all the agents of this vast confederacy—its executive, legislative, judicial, civil, military, foreign and domestic agents. It will be the recipient, too, of such fruits of the labors, and such acquisitions of the enterprise and travels of these agents, as may contribute to illustrate, and explain, and facilitate the public service, or to give precision and vigor to its operations of every kind. As a resource and a sanctuary for intellect, the institution can hardly fail to become an object of patriotic pride and attachment, and must be felt as a persuasive inducement to preserve inviolate the constitution, with whose fate its own is identified.

"I will not dwell upon its special claim to the fostering kindness and hospitality of the Metropolis. Her citizens doubtless appreciate that justly. By designating Washington for its local habitation, the generous testator has summoned the intelligence, the courtesy, and the philanthropy of her inhabitants, as auxiliaries to his beneficent project. Already it has added to her social scene a fixed star, whose beams pervade the scientific world; and, ere long, this rising temple, consecrated to the highest of human pursuits, KNOWLEDGE, will give fresh attraction and firmness to her destiny.

"Mr. Dallas having concluded, a national salute was fired by the Columbian artillery, while the band played a national air.

"The benediction was then pronounced by the Rev. F. S. Evans, and thus were concluded the ceremonies of the day, which were witnessed by at least six or seven thousand persons."

THIRTY-FOURTH MEETING—MAY 25, 1847.

Present, Messrs. Seaton and Totten.

Mr. C. Buckingham appeared before the committee, and represented that, in laying the water pipe from the fire plug on the Market square to the site of the Smithsonian building, according to his contract, (see page 124,) he had incurred (over the amount of \$650, as agreed on in that contract) an excess of expenditure which, including the sum of \$81 for his personal services, amounted to \$138 23; as shown in the following specification of items :

Building Committee of the Smithsonian Institution,

MAY 18, 1847.

To C. Buckingham.

To lead pipe to conduct water from avenue to the site of build-

ing, 8,090 lbs., at 6½ cents	-	-	-	-	\$536 18
107 lbs. of lead pipe, at 7½ cents	-	-	-	-	9 50
156 lbs. of lead pipe, at 7½ cents	-	-	-	-	11 70
iron pipe across the canal	-	-	-	-	42 75
plumber's bill for making joints	-	-	-	-	36 10
excavation and filling in same	-	-	-	-	30 00
one hand, ten days, at \$1 50	-	-	-	-	15 00
one laborer, ten days, at \$1	-	-	-	-	10 00

To two stop-cocks	-	-	-	-	\$5 50
boxes in pipe at canal, and box at end	-	-	-	-	3 00
a cylinder for cock at Market square	-	-	-	-	2 50
relaying pavement on 9th street and market	-	-	-	-	2 00
my own services 28 days, at \$3	-	-	-	-	84 00
					<hr/> 788 23
					650 00
					<hr/> <hr/> 138 23

The amount of \$138 23 Mr. Buckingham asked to be allowed, over and above the amount in the contract agreed to be paid to him.

Mr. Buckingham further alleged, in support of his request, that he had laid down *extra* strong pipe, instead of strong pipe, as by his contract he was alone bound to lay—say about 1,800 lbs. weight of pipe beyond the contract, at 6½ cents, making \$117; that when he received this pipe he had called on one of the committee, (Mr. Seaton,) and informed him that he proposed to return it, as his loss in so doing would have been but \$50, in the shape of the gilt; but was dissuaded by Mr. Seaton from so doing.

The committee declined acting upon Mr. Buckingham's application, but informed Mr. B. that they would lay the case before the Board of Regents.

The committee instructed Mr. Seaton to pay over to Mr. Buckingham the amount of his contract, to wit, \$650; which was accordingly done.

Mr. Seaton stated to the committee, that on the 22d inst. Mr. Downer, contractor for the erection of the fence enclosing the Smithsonian lot, (see page 125.) had represented to him (Mr. S.) that the said fence would cost him much more than the sum of \$400, for which he contracted to erect it; and that he (Mr. Downer) offered to relinquish to the committee all the work he had already put on the fence; they releasing him from the contract and paying him the cost of the materials purchased.

The committee, after consultation, decided that it was inexpedient either to release Mr. Downer from his contract, or to make him any allowance beyond the sum in that contract specified to be paid for the work. And the superintendent was instructed to inform Mr. Downer what had been the decision of the committee in his case, and in that of Mr. Buckingham.

Mr. Seaton submitted to the board the following letter, which had been forwarded by Mr. Owen from Indiana, with a request that it be spread on the journal of the committee:

OFFICE OF NEW JERSEY R. R. AND TRANS. CO.,
New York, April 8, 1847.

DEAR SIR: I am instructed by the directors of the New Jersey Railroad and Transportation Company to inform you, that it is not in their power to give a favorable reply to your application for reduced rates of fare over their road, in favor of Mr. Renwick, as the architect of the Smithsonian Institution. The board, as I mentioned to you, do not feel themselves authorized to entertain applications in cases where there may be a

diversity of opinions and interests among the stockholders whom they represent.

I am, respectfully, yours,

ROBERT SCHUYLER,
Vice President.

Hon. R. D. OWEN,
New Harmony, Indiana.

And, on motion, the committee adjourned.

THIRTY FIFTH MEETING—JULY 23, 1847.

Present, Messrs. Seaton and Totten.

Mr. Seaton submitted from one of the contractors the following letter:

WASHINGTON, *June 1, 1847.*

GENTLEMEN: By an agreement between Mr. Cameron, my present partner, and myself, I have determined (provided it be agreeable to you) to retire from the firm of Dixon and Cameron, as contractors of the Smithsonian Institution. I am anxious to be released from all responsibility, provided the building committee should deem proper to release me.

Mr. Cameron offers Mr. Horace Butler, of New York, as his security for the completion of the building, should the committee deem the same sufficient.

Yours, very respectfully,

JAMES DIXON.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

This letter was, without any action upon it, on motion, laid on the table.

Mr. Seaton submitted from Mr. Cameron, one of the contractors, the following letter:

JULY 10, 1847.

GENTLEMEN: In consequence of the withdrawal of Mr. Dixon from the contract for erecting the Smithsonian building under your charge, which leaves me wholly dependent on my own funds to fulfil the contract which we jointly entered into with your honorable body, I would respectfully solicit of the committee the privilege of being paid once a month on my contract, with the architect's certificate, in place of every two months. My expenses for work, and also for materials, and heavy outlay at the Seneca quarries, and payments to my men once every two weeks, absorb my means very fast.

Praying you, gentlemen, to take these things into your consideration, I beg to add, that the compliance of the committee with this, my respectful request, will much oblige your obedient and humble servant,

GILBERT CAMERON.

To the BUILDING COMMITTEE
of the Smithsonian Institution.

After consultation with the architect, it was

Ordered, That payments be hereafter made to the contractor monthly, upon the architect's estimate, and with reduction of fifteen per cent. as heretofore.

Mr. Seaton stated to the committee, that on examining the fence around the Smithsonian lot, though executed according to contract, he believed it would be insecure and exposed to frequent injury without a stout top-rail; and he submitted, on this subject, from the architect, the following:

JULY 22, 1847.

DEAR SIR: Mr. Carr has made an estimate for putting a $3 \times 1\frac{1}{2}$ inch top-rail on the fence, with two wrought iron nails to each paling, and says that it can be done for sixty dollars.

Will you be so kind as to let me know by McPeak whether he shall proceed with it?

Very truly and respectfully yours,

JAMES RENWICK, Jr.

W. W. SEATON, Esq.,

Member of Building Committee.

On motion, it was

Resolved, That the architect be authorized to contract for the addition of a $3 \times 1\frac{1}{2}$ inch top-rail, to be firmly nailed to the fence, at a cost not exceeding sixty dollars.

On motion of Mr. Seaton, it was further

Resolved, That the architect be authorized to make a contract for white-washing the fence around the lot, at an expense not exceeding sixty dollars.

Mr. Seaton submitted, on the subject of a resolution heretofore passed by the Committee, (page 120,) the following letters, which he received from Mr. Owen:

SUYDENHAM, NEAR PHILADELPHIA,
May 20, 1847.

MY DEAR SIR: Referring to my former letter, I now enclose you the answer from the Girard College, through their architect, Mr. Walter, which would have been transmitted immediately, but that I was from home when it arrived. I regret its nature, and endeavored by personal exertions to render it otherwise, but without success.

The engraving of the college, to which Mr. Walter alludes in no commendatory terms, I will leave with my son, 98 South Fourth street, Philadelphia, (Benjamin Rush,) subject to your order at any moment, should you desire to have it.

On the eve of my departure on the French mission, I cannot lose this occasion of saying with what constant interest I shall continue to follow up the proceedings of the Smithsonian Regents; and of adding, that if it ever be thought I could render the least service to the institution while in Paris, it would afford me the greatest pleasure to be called upon.

I beg you to believe in the esteem with which I am, dear sir, very faithfully yours,

RICHARD RUSH.

HON. ROBERT DALE OWEN.

GIRARD COLLEGE, *May 8, 1847.*

DEAR SIR: I received your favor of the 15th ultimo, enclosing a letter from the Hon. Robert Dale Owen, both of which I laid before the building committee of the Girard College; and I am sorry to say, that in consequence of their having no power nor right to expend the funds intrusted to them for any other purpose than the building of the college, they find themselves unable to comply with the request.

They desire me to say that they highly appreciate the flattering notice Mr. Owen has taken of the work under their charge, and their inability to meet his views by furnishing an engraving for the contemplated work.

The only engraving of the college over which they have any control is no doubt entirely too large for the proposed book, and its execution is not such as would do credit either to the institution or the college.

I send you an impression, by which you will see that it is by no means fit for a work like the one in question.

Very respectfully, your obedient servant,

THOS. U. WALTER.

Hon. RICHARD RUSH.

And, on motion, the committee adjourned.

THIRTY-SIXTH MEETING—OCTOBER 18, 1847.

Present, Messrs. Seaton and Owen.

Mr. Seaton stated to the committee that he had received several letters from Mr. Notman, of Philadelphia, one of the architects to whom a premium of \$250 had been awarded, and who at first had declined to receive said premium in full compensation for his plans; and that Mr. Notman had finally agreed to receive said premium in full, as appears from the annexed check on him (Mr. Seaton) for the amount:

PHILADELPHIA, *September 28, 1847.*

Hon. W. W. SEATON,

Regent of the Smithsonian Institution.

SIR: At sight pay to my order two hundred and fifty dollars, being in full of premium awarded me as compensation for my design for the institution, by the Board of Regents; this being my receipt in full for the same, as ordered.

JOHN NOTMAN.

\$250.

Mr. Seaton further stated to the committee that Mr. Notman requested the return of his drawings, stating that "drawings are invariably returned, except the one preferred."

On motion of Mr. Owen, it was

Resolved, That the request of Mr. Notman, for the return of his drawings, be referred to the Board of Regents at their next session.

Mr. Seaton submitted from Mr. William Archer, of Washington, the following letter:

WASHINGTON, August 27, 1847.

SIR: I address you as a member of the building committee of the Smithsonian Institution. It will be remembered the subscriber furnished a plan, specification, and estimate of an edifice for the institution.

That plan was made to suit what was believed to be the object of the testator, and according to the true meaning of the act of Congress—to “be of the best and most durable materials, and fire-proof.” That plan was received by the building committee, and taken by them to the eastern cities and shown to the artists, architects, and builders, along with, and in contrast with, the plan of Dr. Owen. And as Dr. Owen was paid for his plan, though not adopted, and as all the other architects that copied from him were paid, surely I have the same if not a better right to be paid than they, as both the committee and the architects had the benefit of my specification and estimate for comparison, or to copy from. Therefore I hope the committee will allow me the same consideration as the others.

I am, with all due respect, your obedient servant,

WILLIAM ARCHER.

To W. W. SEATON, esq.,

Building Committee Smithsonian Institution.

Mr. Seaton was instructed to inform Mr. Archer, in reply to the above communication, that he is mistaken in supposing that Dr. Owen's plan was paid for; that although the general internal arrangements of that plan were substantially adopted, and though one of the present wings is a copy, somewhat modified, of the original elevation submitted by him, (Dr. O.,) yet that he (Dr. O.) received no remuneration whatever for his plans, they being considered, like Mr. Archer's, a voluntary offering to the institution; further, that no portion whatever of Mr. Archer's design, either of its general plan or its elevation, had been adopted or copied, with or without modifications; and therefore, even if it be considered as submitted in competition with the other plans, it stands but in the same situation as many others that were returned to the respective architects without any remuneration; and finally, that the committee has no authority to award a premium or grant remuneration in this or any similar case.

The chairman submitted, as a memorandum regarding the condition of the building fund, a copy of a letter yesterday addressed by him to the Chancellor, as follows:

WASHINGTON, October 17, 1847.

MY DEAR SIR: I arrived here last evening from Baltimore, and called upon Mr. Seaton this morning. He showed me a letter from you, in reply to a request of his for a power of attorney to draw \$7,500 of the funds of the Smithsonian Institution to pay contractors, &c., for which same \$7,500 you had previously, to wit: on the 4th instant, signed a requisition; and he requested me to write to you, and comply with your request to be furnished with a copy of such portion of the minutes of our board as gives authority to draw or apply this sum.

I see you have forgotten how this matter of appropriation stands. Just previously to the appointment of the building committee, to wit: on the 28th January last, the board passed resolutions that the said committee

contract for the building at an amount not exceeding \$210,000,

with 10 per cent. added—say	-	-	-	\$231,000
For warming and lighting the same	-	-	-	5,000
For fitting up and furnishing the same	-	-	-	20,000
For fencing the lot	-	-	-	10,000

and some other appropriations.

After which, the board passed the following resolution :

“ Resolved, That the Executive Committee certify to the Chancellor and Secretary of the board the total amount of debts incurred, contracts entered into, and contracts authorized by the board ; and that the Chancellor and Secretary, after examination and approval of the same, certify the same to the proper officer of the treasury for payment.”

This, you will recollect, was done, and \$250,000 of treasury notes obtained.

And they also passed, the same day, the following additional resolution :

“ Resolved, That the Executive Committee be authorized to receive said payment in treasury notes, payable to the order of the Chancellor of the Smithsonian Institution in one year from date, bearing an interest of six per cent. per annum ; and that they be further authorized to exchange \$150,000 of said notes as soon as practicable for an equal amount of six per cent. stock of the United States, payable in twenty years, which stock shall be payable to the Chancellor of the institution ; which said notes and stock shall be deposited for safekeeping only with the Treasurer of the United States, or such other person as they may deem proper, to be drawn out only upon checks or warrants signed by the Chancellor, the Secretary, and the chairman of the Executive Committee.”

Now the amount of \$7,500, which we now want, and for which you have already signed a requisition, (not the proper form ; it should have been “a check or warrant signed by the Chancellor, the Secretary, and the chairman of the Executive Committee,”) we desire to draw in the shape of interest, namely: the half-yearly interest due in August last *on the above treasury notes*, which treasury notes are the result of a requisition already duly made in accordance with the first of the above resolutions for \$250,000, and now, as it were, in the hands of a disbursing agent.

It is clearly expedient and proper to draw the interest first, and not to touch the notes themselves till we are compelled to do so ; and to obtain this interest a power of attorney from you, it seems, is necessary.

The Chancellor, Secretary, and chairman of the Executive Committee, have the full authority to draw not only the interest, but, in proportion as they may be required, the treasury notes themselves also, without any ulterior appropriation, or other action whatever, of the board.

To make our payments to the contractors, we shall have to draw a portion of the notes themselves, and sell them before New Year's day, the date when our semi-annual interest on the principal sum of \$515,169 becomes due.

You may remember that the understanding was, that of the entire sum at which the building might be contracted, not more than one fifth was to be spent by the building committee in each of the five years during which the building will be in progress of construction. Now you will see by the items of expenditure since the 1st of March last, which Mr. Seaton informs me he has sent you, that we have in the present year, so far, paid to the contractor but \$14,088. I learn that the probable amount

we shall have to pay to him up to the 1st January next, may be about \$10,000; and up to the 19th March next, (being one year from the date of the contract,) perhaps \$5,000 more; making the total payments in the first year but \$29,000, instead of \$41,000, (one-fourth the amount at which the building was contracted,) being the amount we were authorized to expend.

We have thus, you will perceive, husbanded our resources so as to save interest much beyond the anticipations of the board.

The building proceeds as well as could be desired; and its appearance, so far as I can learn, gives universal satisfaction.

I am, my dear sir, faithfully yours,

ROBERT DALE OWEN.

The Hon. GEORGE M. DALLAS,
Chancellor.

The chairman, in connexion with the subject of the treatise on Public Architecture, of which the preparation by resolution of the 6th March last (see page 22) was intrusted to him, stated to the committee that he had commenced the collection of materials for said work, but had been able to make but little progress in it while at home, for lack of the necessary works of reference; that it was his intention now to devote his time to it, without interruption, in the hope that he might be able to complete the letter press before the meeting of the board in December, and that some of the chief illustrations were already in hands in New York.

And, on motion, the committee adjourned.

THIRTY-SEVENTH MEETING—OCTOBER 22, 1847.

[Held on the site of the Institution.]

Present, Messrs. Seaton, Totten, and Owen.

Representations having been made to the committee by sundry individuals, in regard to the insufficient quality of some of the materials employed by the contractor in the building, they proceeded to the building, and after carefully examining the materials complained of, they decided that, although there were some pieces of timber in the east connecting range which were not merchantable, these were not of such a character, nor so placed, that any practical injury would result to the structure from their use; and, therefore, the committee decided that it was not necessary to condemn or remove them. They instructed the architect, however, for the future to throw out every piece of timber, no matter how unimportant its destination, which was not strictly merchantable.

The committee fully approved all the other materials used in the building.

And, on motion, the committee adjourned.

THIRTY-EIGHTH MEETING—OCTOBER 26, 1847.

Present, Messrs. Seaton and Owen.

The chairman informed the committee that he had visited, in company with the architect and contractor, the several quarries of Bull run from which material is now getting out for the building, and had inspected the blocks prepared for transportation, of which a large number had accumu-

lated in the quarry in consequence of the injury done to the canal by the freshet several weeks since. He was completely satisfied with the quality and color of all that had been quarried. The stone quarries with remarkable facility, and with such regularity that the face, as it splits, is often smooth and regular enough to resemble stone roughly dressed for the external face of a building. It resembles in this respect the granite described by Dr. Owen, (page 32,) and is quarried in the same manner.

As to the quantity, it seems, as the quarries open, to be absolutely inexhaustible; the representations of Mr. Dixon, former contractor, (see page 119,) to the contrary notwithstanding. The contractor proposes to open another quarry, immediately on the bank of the canal, and some 300 or 400 yards nearer Seneca creek than that which has heretofore furnished material; in which new quarry the face of the rock, so far as it is disclosed, promises even a better quality and color than that in the old; while the transportation from the quarry to the scow will be greatly shortened.

Nothing can be more satisfactory than the aspect of these quarries, the facility with which they are worked, the grain and tint of the material they have furnished, and their promise for the future.

On motion, the committee adjourned.

THIRTY-NINTH MEETING—NOVEMBER 1, 1847.

Present, Messrs. Seaton, Totten, and Owen.

The chairman submitted the first chapter of the work which, in accordance with a resolution of the committee (page 22) he is preparing, on Public Architecture.

It was approved.

The chairman, in connexion with the preparation of the said work, stated to the committee his intention to visit New York in a few days, as well to examine the illustrations now in progress, and put others in hand, as to consult authorities not to be found in this city.

And, on motion, the committee adjourned.

FORTIETH MEETING—NOVEMBER 9, 1847.

Present, Messrs. Seaton and Owen.

On motion of the chairman, it was

Resolved, That the architect be requested to cause to be prepared, so as to be ready next summer, the furniture of the Regents' room, as set down in the specifications, to wit: eighteen chairs and a table; and that he cause also to be made, as furniture for the Secretary's room, and to be ready at the same time, a desk, six chairs, and a small centre table.

On motion of Mr. Seaton, it was

Resolved, That the remuneration of William McPeak, messenger, be, from the date of his last payment, to wit: the second of August last, seven dollars per week.

On motion of Mr. Seaton, it was

Resolved, That the chairman order, for the use of the board, 250 copies of Senate document No. 212, being the first report of the Board of Regents to Congress; provided the cost of the same do not exceed fifteen dollars.

And, on motion, the committee adjourned.

FORTY-FIRST MEETING—NOVEMBER 26, 1847.

Present, Messrs. Seaton and Owen.

The chairman, on his return from New York, made the following

REPORT.

In regard to the illustrations of the work on Public Architecture, I find that to procure execution in a manner that shall be creditable to the institution, will cost more than I had anticipated. Mr. Drayton, who has charge of the publications of the Exploring Expedition, and has, in consequence, great experience, both in regard to the relative talents of engravers and to the proper cost of engravings, has afforded me much assistance in this matter. We found it impossible, however, to contract for the steel engravings, giving two perspective views of the institution, one from the southeast, and the other from the northwest, and executed in the best style of art, for less than from three hundred and fifty to four hundred dollars for the two ; which is fifty per cent. more than I had expected to pay.

Having satisfied myself, however, that engravings of this character could not be obtained for less, I empowered Messrs. Sherman and Smith, corner of Broadway and Liberty street, to whom Mr. Drayton recommended that they should be intrusted, to proceed with one specimen ; after which, they would be able to fix the exact price at which the two could be completed.

For the reasons above stated, and considering the very limited amount placed at the disposal of our committee, for illustrations, I judge it prudent chiefly to trust, for the other illustrations, to wood cuts, which are now executed in New York in very good style, and which will not cost more than half as much as steel engravings.

Accordingly, I called on Mr. Adams, by whom were executed the wood-cuts in Harper's Pictorial Bible, and who has since, as I learn, retired from the profession. I had been advised to consult him as one who knew more about the relative talents of wood-cutters in this country than probably any other man, and he recommended, as the best for architectural engraving, Mr. John H. Hall, Fulton street. I had several interviews with Mr. Hall, obtained his prices, and inspected several specimens of his work, with which I was well pleased, and of which two are herewith submitted to the committee. The effect does not seem to me greatly inferior to that of steel engraving.

Mr. Hall offered to execute the perspective view of the Gothic plan of Mr. James Renwick, ordered by resolution of this committee of April 10, (see page 120,) and which requires more work than the perspective view of the institution, for \$100.

It will be necessary to employ more than one wood-cutter, in order to complete the illustrations in reasonable season ; and if the committee decide that it is best to procure the illustrations chiefly on wood, I have made the arrangement for putting them in hands. Mr. Roberts, whom I stated in my report of April 6 (see page 117) to have been recommended by Mr. Durand as the best wood-cutter in this country, I found exclusively engaged by one of the tract societies.

In regard to the application made by resolutions of this committee,

under date April 19, to the vestry of Grace church, and of Trinity church, and to the firm of Alexander Stewart & Co., for plates of Grace church, Trinity church, and Stewart's new marble store, I have to state that the Grace church vestry have liberally agreed to pay one hundred dollars for a plate of their church, on the terms of our resolution. The Trinity vestry have not yet come to a final decision. Mr. Stewart was not seen, though twice called on; but one of his partners informed Mr. Renwick that they would probably furnish an engraving of their building, as it is to be ultimately completed.

By the terms of our resolution, the engraving of Grace church must be executed on steel or copper; and as it is a much less elaborate engraving than that of the Smithsonian building, Mr. Drayton thinks we can have it executed on steel for a hundred dollars.

Even if we decide to let all the other illustrations be cut on wood, it will, I think, be impossible to execute those already embraced in our resolutions, (see page 120,) and such as are indispensable to a due explanation of the text to the general reader, for the sum of \$1,000, to which the appropriation is at present limited. Nor do I believe that the treatise itself, including the appendix, can be advantageously condensed into a hundred and fifty pages of letter-press, as by the agreement with Wiley & Putnam (page 115) it was stipulated it should. I deemed it proper then to seek to obtain from these publishers a conditional supplement to that agreement, based on the contingency that the Board of Regents might vote an additional appropriation. They agreed to the proposal I made to them, and signed the following

Supplement to the agreement of April 3, 1847.

Whereas, by an agreement made the third day of April, 1847, between Wiley & Putnam, publishers of New York, and Robert Dale Owen, on behalf of the building committee of the Smithsonian Institution, regarding the publication of a treatise, to be entitled "Hints on Public Architecture," it was stipulated that the illustrations of the said treatise (that is to say, its engravings and wood-cuts) should cost not less than one thousand dollars, and that the number of pages of said treatise should not exceed one hundred and fifty pages of letter-press: Now, therefore, it is further agreed, that in case the said building committee should see fit to increase the value of the said illustrations, then the said Wiley & Putnam agree that the number of pages of letter-press may be proportionably increased; as, if five hundred dollars additional be expended for the illustrations, then one half of one hundred and fifty pages—say seventy-five pages—may be added to the letter-press; and so of any larger or smaller sum: *Provided, however*, that the entire number of pages of letter-press shall not, in any case, exceed two hundred and fifty.

Witness our hands and seals this 22d of November, 1847.

WILEY & PUTNAM. [L. s.]

In presence of THOS. B. GRAVES,
as to Wiley & Putnam.

ROBERT DALE OWEN,
*on behalf of the Building Committee
of the Smithsonian Institution.*

I recommended that in the report of the building committee to be made to the board at their next meeting, it be proposed that they should increase the appropriation accordingly.

I examined, with a good deal of care, most of the churches that have been recently erected and are now in progress of erection in New York. They are, as a general rule, very creditable to the architectural talent of the country. Among those yet unfinished, one of the most promising is St. George church, (Episcopalian,) situated at the corner of Sixteenth street and Stuyvesant square, built in the same style as our building, namely, in the Lombard style of the twelfth century. The general effect will, I think, be very fine, especially of the front towers. The rear terminates in an absis, somewhat similar to that on the north front of our west wing—a beautiful feature. The building when completed, it is said, will cost one hundred and fifty thousand dollars; and though I could not obtain its exact size, it will be one of the largest churches in New York, being some ninety feet in width. Its galleries are to be supported from the side walls, without pillars. Some of its details appeared to me faulty, as the corbel course along the upper portion of its side walls and on its towers is feeble, and not sufficiently projecting for a building of such magnitude; and I think the architect would have done better to trust to the flat Norman buttress running into the corbel course above, rather than to introduce a buttress of a much later date, deep and heavy, and which, from many points of view, wholly conceals the windows. The latter (the windows) are both wider and higher than is usual in the Lombard style; but I think the effect is good.

I purchased, and herewith submit, a perspective view of this church, as one of the first proofs that the opinion I expressed when the style of our building was objected to on the score of its singularity, (namely, that a greater objection might hereafter be, that Lombard buildings would be repeated all over the country, as Grecian and Gothic have been, until we were tired of them,) is not unlikely to be verified.

I visited also some of the older churches—among the rest St. Paul's, in Broadway, near the Astor House. It exhibits great beauties and great defects. Its spire is, in my opinion, one among the prettiest in its style (the Roman) in the world; and as such, I had it dagueretyped, and shall use it as an illustration in our work. The interior, with its Grecian pillars and broken entablatures, forming imposts for the arches of its galleries, furnishes a striking illustration of the bad effect produced by that heterogenous mixture of Gothic forms and Grecian details that goes under the name of Roman.

Through the kindness of Professor Renwick, I obtained admittance to the New York Society library, and spent some time there examining its works on architecture.

I also obtained, through Professor Renwick, an opportunity of examining Canina's great work on Egyptian, Grecian, and Roman architecture, published a few years since at Rome. It may be said, in each style of which it treats, almost to exhaust the subject—at least to furnish the best and most extensive modern illustrations of Egyptian, Grecian, and Roman buildings, to be found in any one collection now extant. As almost all the works on architecture heretofore purchased by us have been on Gothic and Norman architecture only, I think this work would be a valuable and important purchase. It is the property of a private gentleman,

Mr. Parish, who imported it; and I understand from Professor Renwick it could be had from him at first cost in Rome, with duty added. It would be of much use to me in the preparation of the work I have now in charge.

At Philadelphia I saw Mr. Notman, and at New York Mr. Arnot; both of whom expressed a desire that their designs should be published in our work. I think it likely that if we agreed to furnish each of them a hundred copies of the engraving, (which we can obtain at the cost of paper and printing,) they would supply us, at their own cost, with a reduced perspective view from which to engrave; and if the board votes us an additional appropriation, I recommend that such a proposition be made to them; and also to Mr. Daniel, of Cincinnati, who has signified to me a similar desire in regard to the publication of his design—a design, as the committee may remember, in the Italian style.

At Philadelphia I called upon Mr. Joseph R. Ingersoll, who has always shown much interest in the institution, and he has promised to procure for me, from authentic sources, the exact dimensions of the Girard College building; its cost to the present time; and the estimated cost of its completion. He also stated to me that he would endeavor to procure some particulars regarding the style and dimensions of a large cathedral of which the foundations have recently been laid by the Catholics of Philadelphia.

I made the acquaintance in New York of Mr. Kellogg, the artist who has charge of Mr. Power's "Greek slave." He expressed to me a strong desire that some arrangements might be made by which our institution should obtain that statue, and fit up one of the rooms in our building (perhaps in one of the central towers) for its reception. It is, in my opinion, one of the finest statues that has ever been produced, in ancient or modern times, and as well worthy of a separate tribune as the Venus de Medicis.

ROBERT DALE OWEN.

WASHINGTON, *November 26, 1847.*

On motion of Mr. Owen, it was

Resolved, That Professor Renwick be authorized to purchase on behalf of the institution, of Mr. Parish, Canina's work on Egyptian, Grecian, and Roman architecture, provided the same can be obtained at the first cost in Rome, with the duty added.

Resolved, That the chairs for the Regents' room and Secretary's room be covered with maroon-colored leather.

No. 3.

Report of the Executive Committee, on the state of the funds.

The Executive Committee report the state of the funds of the institution, on the 1st instant, as follows:

The Board of Regents have drawn from the treasury, of accruing interest, to pay the current expenses of the institution - - \$40,660 81

The disbursements from this fund have been as follows:

For expenses of Board of Regents and its committees - - - - -	\$3,876 47	
For materials and erection of specimen walls, and superintendence thereof - - - - -	393 63	
For books purchased - - - - -	555 99	
For compensation to architects for designs, &c. - - - - -	1,325 00	
For recording and copying - - - - -	378 98	
For services of Assistant Secretary - - - - -	200 00	
For services of messenger - - - - -	402 50	
For postage - - - - -	28 99	
For printing - - - - -	347 63	
For examination of quarries, including expenses of geologist - - - - -	370 76	
For perspective views of institution - - - - -	200 00	
For chemical examination of building-materials - - - - -	94 50	
For expenses connected with ceremonies, &c., on the occasion of laying the corner stone of building - - - - -	185 37	
For stationery - - - - -	112 83	
For philosophical and chemical apparatus - - - - -	1,571 47	
For salary of Secretary - - - - -	1,750 00	
For expense of first volume of Transactions, in part - - - - -	203 53	
For incidentals, including furnishings, freight, carriage, hack-hire, &c. - - - - -	557 20	
For surveying and recording levels of institution grounds - - - - -	112 50	
For expenses of building, including superintendence - - - - -	25,002 67	
	<u>37,670 02</u>	
Balance in the hands of Corcoran & Riggs, December 1, 1847 - - - - -	2,990 79	<u>40,660 81</u>

The entire amount of the funds of the institution on the 1st instant was \$758,159 79, being \$861 79 more than the amount of its funds on the day of the passage of the act by which it was organized; and on the first of next month there will be due of interest, \$15,455.

The institution has no debts, except a few unimportant items not yet rendered, and also an account for the seal of the institution.

W. W. SEATON,
ROBERT DALE OWEN,
A. D. BACHE.

DECEMBER 15, 1847.

No. 4.

Proceedings of the Board of Regents of the Smithsonian Institution, from the date of their last annual report to the 27th December, 1847.

WEDNESDAY, DECEMBER 8, 1847.

This being the day fixed, by resolution of September 9, 1846, for the regular meeting of the Board of Regents, the board convened at the room of the Vice President of the United States, in the Capitol.

There appeared George M. Dallas, the Chancellor, and the following Regents: A. D. Bache, Sidney Breece, Gideon Hawley, Henry W. Hilliard, Robert Dale Owen, William W. Seaton, and Joseph G. Totten.

A quorum being present, the board proceeded to business, the Chancellor in the chair.

Mr. Owen, from the Building Committee, presented a report, together with a complete copy of the journal of the committee.

Laid on the table.

FRIDAY, DECEMBER 10, 1847.

The board met pursuant to adjournment.

Present, in addition to those in attendance at the last meeting, Lewis Cass and J. A. Pearce.

The Secretary made a report relative to the transactions of the past year, the acceptance of memoirs, the purchase of apparatus, &c., and including a programme of organization.

SATURDAY, DECEMBER 11, 1847.

Mr. Owen, from the Executive Committee, made a report relative to a plan of finance and of general appropriation of funds up to the 19th of March, 1852, or until the building shall be completed.

On motion of Mr Hawley,

Resolved, That the report of the Building Committee, the report of the Secretary, and the report of the Executive Committee, be inserted at large in the journal of the board.

(See documents 1, 2, 5, and 6.)

MONDAY, DECEMBER 13, 1847.

On motion of Mr. Owen,

Resolved, That the Executive Committee cause to be printed, in the same form as the report on organization, one thousand copies of the address delivered by the Chancellor on occasion of laying the corner-stone of the institution, and that the Secretary cause to be laid on the desk of each member of the Senate and of the House of Representatives two copies of the same, as soon as it shall be printed.

On motion of Mr. Bache,

Resolved, That so much of the programme presented to the Board of Regents by the Secretary of the Smithsonian Institution, in his recent report, as is contained in sections Nos. 1 and 2 of said programme, be pro-

visionally adopted; that the Secretary be charged with the execution of its details, as far as the funds appropriated for the several objects may permit, and that he be directed to report annually to the board his progress in the execution of this duty.

Resolved, That the Executive Committee be directed to report, after consultation with the Secretary, to the Board of Regents, in relation to the special appropriations desirable for the year beginning March 19, 1848, in execution of parts of the programme which have been provisionally adopted.

Mr. Owen asked to be excused from service as a member of the Executive Committee, representing to the board that the most important duties of this committee would hereafter be to select among various scientific objects and researches those to which appropriations should be made, and that there were gentlemen on the board, not members of the committee, particularly a Regent from Washington, better qualified than himself to make such selection.

The motion to excuse Mr. Owen from service on the Executive Committee being put by the Chancellor, it was lost.

Mr. Totten asked to be excused from service as a member of the Executive Committee, representing to the board that the time spent by him as a member of another committee of the board was as much as he could spare from his professional duties.

The motion to excuse Mr. Totten being put by the Chancellor, it was carried.

Thereupon the board proceeded, by ballot, to fill the vacancy thus created; and, on counting the ballots, it appeared that Mr. Bache was elected.

The Secretary presented a list of books received in virtue of the provision contained in the tenth section of the act organizing the institution; also, a list of books presented to the institution.

WEDNESDAY, DECEMBER 15, 1847.

Mr. Seaton, from the Executive Committee, presented a report on the state of the finances of the institution.

Mr. Bache, from the Executive Committee, to whom was referred the resolution of the 13th instant, relative to appropriations for the year commencing on the 19th of March, 1848, made the following report:

“The committee, after consultation with the Secretary, recommend the passage of the following resolution:

“That the appropriations for the year commencing on the 19th of March, 1848, for objects other than those provided for out of the building fund, be for the present as follows:

“For the publication of Transactions, the sum of three thousand and five hundred dollars;

“For computations relative to occultations, two hundred and fifty dollars;

“For purchase of magnetic instruments, six hundred dollars;

“For instruments and other expenses connected with meteorological observations, one thousand dollars;

“For arrangement of apparatus, &c., in such portion of the building as shall be completed next autumn, one hundred and fifty dollars;

“For expenses of lectures, including lighting of lecture-room, five hundred dollars;

“ For publication of scientific reports, five hundred dollars;

“ For general expenses of the institution, including salary of officers, expenses of board and its committees, clerk hire, postage, &c., seven thousand five hundred dollars;

“ For purchase of books, and incidentals connected therewith, one thousand dollars;

“ Or so much of each of said sums as may in the said year be required.”

On motion of Mr. Hough, the above resolution was adopted.

On motion of Mr. Bache,

Resolved, That the Chancellor of the Smithsonian Institution be the organ of communication of the Smithsonian Institution with the public, and that the Secretary be the organ of communication between the officers of the institution and the Chancellor, and also between the officers of the institution and the board.

FRIDAY, DECEMBER 17, 1847.

On motion of Mr. Hough,

Resolved, That by the appointment of Hon. Richard Rush, of Pennsylvania, to the office of minister plenipotentiary to France, and his continued absence from the United States, and residence at a foreign court for an indefinite length of time under such appointment, his office of Regent of the Smithsonian Institution has become vacant, and that Mr. ——— be a committee to introduce into, and procure to be passed through the Senate of the United States, the necessary joint resolution of the two houses of Congress for the appointment of ——— a Regent of said institution, to fill such vacancy, pursuant to the third section of the act incorporating said institution.

On motion of Mr. Hough, it was

Resolved, That the first blank be filled with the name of Mr. Pearce, and the second with that of Mr. Owen.

On motion of Mr. Bache, it was

Resolved, That the Board of Regents recommend to the establishment the election of the Hon. Richard Rush, of Pennsylvania, late a member of the Board of Regents, as an honorary member of the Smithsonian Institution.

On motion of Mr. Seaton, it was

Resolved, That the Chancellor be deputed to request a meeting of the establishment for the purpose of proposing the Hon. Richard Rush as an honorary member of the Smithsonian Institution.

On motion of Mr. Seaton, it was

Resolved, That the Chancellor be requested to address a letter to Mr. Rush, conveying to him the regret of the Board of Regents at his absence, and consequent retirement from the board.

FRIDAY, DECEMBER 21, 1847.

In addition to the members previously mentioned as attending the session of the board, Mr. Choate, of Massachusetts, appeared.

The Secretary presented various letters and reports from different individuals and societies, recommending the plan of organization of the Smithsonian Institution given in the programme presented to the board in his report; which, on motion, were laid on the table.

The Secretary presented a letter addressed to himself by Professor Jewett, containing suggestions as to the formation of the library.
(See appendix to document No. 6.)

TUESDAY EVENING, DECEMBER 21, 1847.

The resolutions appended to the report of the Executive Committee relative to a scale of expenditure up to the 19th of March, 1852, coming up for consideration, they were adopted.

On motion of Mr. Bache,

Resolved, That the Secretary be requested to inform the Assistant Secretary, Professor Jewett, that the Board of Regents will expect him to enter upon his duties on the 19th March, 1849, at which time his salary will commence.

Mr. Choate offered the following resolution; which, on his suggestion, was laid on the table:

Resolved, That a committee of three be appointed by the Chancellor, to consider, in conjunction with the Secretary, and to report at the next meeting, what services may be rendered by the Assistant Secretary, acting as Librarian, between this time and the 19th March, 1847, and what may probably be the expense of these services.

WEDNESDAY, DECEMBER 22, 1847.

Mr. Owen renewed the request previously made by him to be excused from serving on the Executive Committee, stating that if, in accordance with the tenor of a resolution heretofore passed by the board, he should be re-elected Regent, his duties as a member of the Building Committee would demand much of his time, as the committee had referred to him the preparation of the manuscript of the volume on public architecture, with the publication of which they have been charged by the board; and by excusing him from service now, the board would have an opportunity, before they adjourned, to fill the vacancy.

The motion to excuse Mr. Owen from service on the Executive Committee being put by the Chancellor, it was carried.

Whereupon, by unanimous consent, the board proceeded to fill the vacancy on the Executive Committee thus created, by resolution; and,

On motion of Mr. Hilliard, it was

Resolved, That Mr. Pearce be appointed a member of the Executive Committee.

On motion of Mr. Seaton, it was

Resolved, That the salary of the messenger be hereafter at the rate of four hundred dollars per annum.

THURSDAY, DECEMBER 23, 1847.

George P. Marsh, of Vermont, and Robert McClelland, of Michigan, members of the board appointed from the House of Representatives to fill the places of Mr. Owen and Mr. Hough, whose term of service has expired, appeared and took their seats, as also Mr. Hilliard, re-appointed a member of the board.

The resolution offered by Mr. Choate on Tuesday, the 21st instant, relative to the appointment of a committee of three to consider what services may be rendered by the Assistant Secretary, acting as librarian, between this time and March 19, 1849, coming up for consideration,

It was adopted.

And the Chancellor appointed Messrs. Choate, Bache, and McClelland the said committee.

The Secretary stated to the board that during the past year he had, with the consent of the Executive Committee, given a course of lectures at Princeton, for which he had received, including the rent of the house occupied by his family, a compensation of one thousand dollars. For this sum, after deducting certain expenses for clerk hire, assistance, &c., he had given credit to the board in his account for the present half year.

FRIDAY, DECEMBER 24, 1847.

The Chancellor presented the following letter from Mr. Cass:

WASHINGTON, *December 24, 1847.*

SIR: Finding it impossible, consistently with my other duties, properly to execute the trust of a Regent of the Smithsonian Institution, I request that this may be considered as my resignation of that office.

I have the honor to be, very respectfully, your obedient servant,
LEWIS CASS.

To the Hon. GEORGE M. DALLAS,
Vice President of the United States.

On motion of Mr. Seaton, it was

Resolved, That Mr. Breese be requested to move in the Senate of the United States for the appointment of a successor to Mr. Cass.

On motion of Mr. Seaton, it was

Resolved, That the account of expenditures rendered by the Executive Committee, after being certified by the Chancellor and the Secretary, be entered on the journal. [See document No. 3.]

MONDAY, DECEMBER 27, 1847.

Mr. Choate, from the committee appointed on the 23d instant, relative to the duty of the Assistant Secretary, made the following report, with accompanying resolutions:

The committee appointed at a meeting of the Board of Regents on the 23d instant, to inquire and report in what manner the Assistant Secretary, as librarian, may be employed (if at all) with advantage to the Smithsonian Institution, between the present time and the 19th March, 1849, respectfully present for the consideration of the board the following resolutions, embracing the matter of their inquiries, together with a report from the Assistant Secretary.

Respectfully submitted by

R. CHOATE,
A. D. BACHE,
R. McCLELLAND,
Committee.

The resolutions accompanying the report of the committee were as follows:

Resolved, That the Assistant Secretary, acting as librarian, may be employed with advantage to the Smithsonian Institution, during a portion of the time between this date and the 19th of March, 1849, in the following duties, to wit:

1. The preparation of catalogues of books suitable for the commencement of the library, in accordance with the plan of organization heretofore adopted by the Board of Regents.

2. The purchase of the more necessary books on bibliography.

3. The collection and systematic arrangement, for purposes of comparison, of the printed catalogues of the principal libraries throughout the United States; together with information in regard to the expenditures, plans of increase, and other particulars relating to the said libraries.

4. The collection of works to which the institution may be entitled under the tenth section of the act organizing the institution.

Resolved, That the Assistant Secretary, acting as librarian, be employed for the purposes specified in the foregoing resolution under the direction of a committee of three members of the board, to be appointed by the Chancellor, and to act in conjunction with the Secretary, at a compensation to be fixed by the Executive Committee, but not to exceed one thousand dollars, for any services he may render between this date and the time fixed for the commencement of his regular duties as Assistant Secretary.

The said resolutions coming up for consideration, they were adopted.

Whereupon, the Chancellor appointed Mr. Choate, Mr. Marsh, and Mr. Bache the said committee.

The Secretary presented to the board the subject of the remuneration of the Assistant Secretary for services rendered during the past year: whereupon,

On motion, it was

Resolved, That the subject of compensation to the Assistant Secretary for services rendered during the past year, be referred to the Executive Committee.

The board then adjourned *sine die*.

No. 5.

Report of the Executive Committee of the Smithsonian Institution, embodying a proposed scale of expenditure for four years from the 19th of March, 1847; being the remainder of the term of the contract for the erection of the institution building.

The contract for the institution building has been made; the building itself is considerably advanced; and the building committee have had an opportunity of ascertaining, with some degree of accuracy, the entire amount of expenditure made, or authorized, or necessarily to be incurred, on the said building, and on the lot on which it stands, until the same shall be completed—say on the 19th of March, 1852.

Some progress has also been made in the preparation of transactions, and in carrying out other measures in fulfilment of the will of the testator, to “increase and diffuse knowledge among men.”

At this point of progress, the Executive Committee—knowing the great desire often expressed by various members of the board during former meetings, that the erection of the institution building, though necessarily spacious on account of the special requirements of the act organizing the institution, should not withdraw from the funds of the institution more than a moderate portion even of that accumulated interest which the appropriation by Congress authorizes to be thus employed; remembering, also, that the Chancellor and one of the members of the board have heretofore introduced resolutions embodying their wish that the sum thus withdrawn should not, if possible, exceed one hundred thousand dollars; but more especially calling to mind the fact that a certain prospective plan of finance and scale of expenditure, throughout the years in which the building shall be in progress, has been heretofore submitted to the board by one of its members, and, though not spread formally upon its minutes, did, in fact, receive the sanction of the board—ask leave here to submit a scheme of expenditure for four years from the 19th of March next, based upon that plan of finance, and differing from it only in some details suggested by the present state of the financial affairs of the institution, by which the above objects may substantially be accomplished; so that, on the 19th of March, 1852, when the building shall be completed, including its fitting up, furnishing, lighting and heating, and the lot belonging to the institution shall be laid out, planted, and permanently fenced; and when, in a word, everything shall be prepared, so that the institution can go into full operation, without any necessity to take from its current income thereafter any amount to add to its buildings or to secure or adorn its grounds, there shall still remain as a permanent fund, bearing six per cent. interest, payable semi-annually, the original capital of \$515,169, and the interest that had accumulated on the same, specified in the second section of the act organizing the institution, to wit: the sum of \$242,129, deducting from these two sums about one hundred thousand dollars only; or, in other words, so that the sum of \$657,398, or thereabouts, should remain on the 19th March, 1852, as the permanent fund of the institution.

To carry out a plan having this desirable object in view, two conditions (both within the power of the board) are necessary: the first, that the entire cost of the building—including the complete fitting up and fur-

nishing of the same; lighting and heating, ventilating and draining the same; supplying the same with water; laying out in grass and planting with trees and shrubs the lot; fencing the same, both with the present temporary fence and the final permanent one; also all expenses for superintendence of erection, including the cost of architect's office, and other incidentals, so as, in fact, to cover all expenses whatever that have been incurred and are to be incurred on the building, and on the lot on which it stands, until the completion of the building and of the preparation of the lot, up to the 19th of March, 1852—shall not exceed *two hundred and fifty thousand dollars*; of which the balance unexpended on the 19th of March, 1848, shall be expended in nearly equal proportions in each of the four years next following that date.

The second condition is, that the current expenses of the institution, exclusive of those just enumerated, but including the expenses of the board and its committees; the salaries of officers, including messenger; the expense of all publications, researches, or other similar undertakings; the purchase of books and apparatus; and all incidentals whatever, not enumerated in the foregoing paragraph, shall not exceed, for each one of the four years next after the 19th of March, 1848, *fifteen thousand dollars*.

The committee proceed to furnish the details necessary to substantiate the position here taken.

In pursuance of instructions contained in a resolution of the board of the 28th of January last, this committee, after certifying to the Chancellor and Secretary the amount of contracts entered into and authorized by the board, received the said amount, to wit: the sum of two hundred and fifty thousand dollars, in treasury notes, payable to the order of the Chancellor of the Smithsonian Institution, dated the 17th of February, 1847, and bearing six per cent. interest, payable semi-annually thereafter. These treasury notes are deposited for safekeeping with the Treasurer of the United States; and the board will recollect that, by its resolution of the 28th of January last, they can be drawn out only upon checks or warrants signed by the Chancellor, the Secretary, and the chairman of the Executive Committee. Of these treasury notes, ten thousand dollars were thus drawn out on the 30th of October last, to pay the contractor and other expenses. The remainder, to wit: the sum of two hundred and forty thousand dollars, still remains invested in said treasury notes. The ten thousand dollars sold netted \$10,121 67, being par, with interest added to the day of sale.

By this arrangement, very favorable to the finances of the institution, the whole of its funds, both original, principal, and accumulated interest, at present amounting to the sum of \$755,169, become productive; bearing, under the safest possible investment, six per cent. annual interest, payable semi-annually.

So long as no more treasury notes are sold, the annual income of the institution, from the above sum thus invested, will be on original principal \$30,910, and on treasury notes \$14,400—together, *forty-five thousand three hundred and ten dollars* annually.

If the entire annual expenses of the institution, for building and all other purposes, could be restricted to the above sum of forty-five thousand three hundred and ten dollars, it is evident that the annual income of the institution would remain permanently at that amount.

Whenever any amount of treasury notes is sold, the interest from that source, of course, ceases. Whatever annual amount, therefore, beyond the above \$45 310, shall, in the course of four years after the 19th of March, 1848, be expended by the institution, that amount, together with six per cent. interest on each item of treasury notes sold, from the date of the several sales to the 19th of March, 1852, will be so much deducted from the present investment; that is to say, from the sum of \$755,169.

It remains to be seen what the annual excess beyond the above annual income will be in each of the four years next following the 19th of March, 1848, if the suggested scale of expenditure be adopted, and how much of the present capital of the institution the said excess will absorb.

The balance on hand, to meet current expenses, on the 1st instant, as will appear by reference to the bank book of the institution, herewith submitted, was \$2,991. The amount of interest which will be received by the institution previously to the 19th of March next, is \$22,655, to wit: on the 1st of January next \$15,455, and on the 17th of February next \$7, 200. These two items added to the balance in hand give \$25,646; being the amount available, without encroaching on the present investment, up to the 19th of March next; that is to say, up to the termination of the first year of the building contract.

The committee, after consultation with the Secretary of the institution as to the several amounts which may be required in the course of the winter and spring, for the various objects intrusted to him; after carefully calculating, also, the expenses to arise from this time to the 19th of March, have introduced a series of resolutions, appropriating the above amount of \$25,646.

The committee learned from the Secretary that the expense of the first volume of the Transactions of the institution would be considerable, on account of the number of plates; and, at his suggestion, they have put the appropriation for that object, out of the above fund, at \$2,000, instead of \$1,000, as formerly voted. At his suggestion, also, they have set apart for apparatus one thousand dollars. In accordance with a request made in the report of the building committee to the board, they have also increased the appropriation for the forthcoming volume on Public Architecture, from one thousand dollars to two thousand dollars. The items for contingencies, including the expenses of the board and its committees, they have put at \$1,646. If, as the committee recommend, a resolution be passed that there be hereafter but one annual meeting of the board, its expense will not exceed \$500 or \$600, which will leave a margin of upwards of one thousand dollars for incidentals and contingencies, including the seal of the institution, not yet paid for.

After these various items have been, as the committee think, all fully provided for, so that they shall not fall upon the current expenses of the year commencing on the 19th of March next, there still remains, out of the above \$25,646, the sum of seventeen thousand dollars, to be appropriated to the building fund, as by the following synopsis of receipts and appropriations will more clearly appear.

Proposed appropriations, viz:

For first number of Transactions	-	-	-	-	\$2,000
For work on "Public Architecture"	-	-	-	-	2,000

For experiments on building materials, heretofore ordered	
by the board	\$500
For part salary of Secretary	1,500
For apparatus	1,000
For the building fund	17,000
For contingencies, including expenses of the board and of its committees	1,646
Total	<u>\$25,646</u>

Receipts from interest, up to the 19th March, 1848, viz:

On the 1st of January	\$15,455
On the 17th of February	7,200
Total from interest	<u>22,655</u>
On hand 1st December, 1847	<u>2,991</u>

Total available funds to 19th March, 1847 — \$25,646

By the report of the building committee, dated the 1st instant, it will be seen that the expenditure for the building and grounds, including superintendence and other contingencies, was \$25,002 67; say twenty-five thousand dollars. Add to this amount the above proposed appropriation of \$17,000, and it will appear, that up to the 19th of March next there is provided towards the building fund the amount of \$42,000, being some six thousand dollars more than the probable expenditure to that date, as estimated by the building committee.

If the above amount of \$42,000 be deducted from the entire amount of building fund, as now proposed to be fixed at \$250,000, it will leave to be provided towards that fund in the four years next following the 19th of March next, the sum of \$208,000. If, as proposed, this amount be spread equally over the said four years, it will give an expenditure each year for these objects of \$52,000.

If, now, we deduct from the annual income of the institution as it will stand on the 19th of March next, the sum of \$15,000, hereinbefore proposed to be annually appropriated for objects not connected with the building and grounds, it will leave an annual amount from accruing interest of \$30,310, which may go to the building fund, so long as the present investment remains undiminished.

But if we deduct this sum of \$30,310 from the annual amount still to be provided for building purposes in each of the four last years of the building contract, as shown above, to wit: from the sum of \$52,000, we shall have an annual excess of expenditure over available interest of \$21,690, which annual excess must be provided for by sale of treasury notes; and as, in proportion as these are sold, the interest on them until the end of the term of the building contract will be lost to the building fund, the annual excess thus to be provided for by sale of treasury notes will, if we suppose it to be drawn at the commencement of each year, (which is the most unfavorable supposition,) reduce the invested fund in the course of the four years ending 19th March, 1852, nearly \$100,000, thus:

Excess during the first year -	-	-	-	\$21,690 00
Four years interest on ditto -	-	-	-	5,205 60
Excess during the second year	-	-	-	21,690 00
Three years interest on ditto	-	-	-	3,904 20
Excess during the third year	-	-	-	21,690 00
Two years interest on ditto -	-	-	-	2,602 80
Excess during the fourth year	-	-	-	21,690 00
One year's interest on ditto -	-	-	-	1,301 40
				<hr/>
				99,774 00
				<hr/>

It appears, therefore, that, after setting aside sufficient appropriations for all objects now in progress, together with an adequate allowance for contingencies up to the 19th March, 1848, we may, commencing from that date, authorize the annual expenditure until the completion of the building of fifteen thousand dollars for objects unconnected with the building fund; and then if we restrict the building fund to \$250,000, and provide that of the last \$208,000 of that fund not more than one-fourth of the same—that is to say, \$52,000—shall be spent in each of the last four years of the contract, we shall be able to complete the building and grounds, including all expenses thereon, without withdrawing more than one hundred thousand dollars from the present invested funds of the institution.

And as these invested funds, to wit: the sum of \$755,169, amount to within \$2,229, as much as the total amount of principal and interest by the charter conveyed to the institution, it follows, that by the proposed plan the building may be completed without withdrawing from the original funds of the institution, as they stood on the day it was chartered, more than about \$102,000.

To the conditions necessary to bring about a result which will be confessed to be desirable, there is not, the committee think, any just objection.

The building committee, after some experience, and a careful examination of the subject, express in their report the opinion that a building fund of \$250,000 will probably be sufficient.

The expediency of applying to the building fund, for four years to come, the interest accruing over and above an annual sum of fifteen thousand dollars, alone remains to be considered.

It is evident that the act organizing the institution contemplated the application of a portion of the current interest, while the building was in progress, to its erection; for, after appropriating the accumulated interest for the erection of a building, it adds, in the fifth section, “together with such sum or sums out of the annual interest accruing to the institution as may in any year remain unexpended, after paying the current expenses of the institution.” The sole question, then, is, what amount of that interest may judiciously be thus applied?

It will be admitted that the amount suggested for the current expenses of the institution until the building shall be completed, to wit: the annual sum of fifteen thousand dollars, is a sufficient one gradually to bring its plans into execution, provided a considerable portion of the same be not annually expended in the purchase of books and collections. The committee think this cannot wisely or advantageously be now done; and that for the present, the only purchase made of books for the institution should

be, as heretofore expressed in the report of the Committee on Organization, of "such valuable works of reference as in the prosecution of its plan may be required." In accordance with these views the committee report a resolution.

If any considerable amount of books, beyond those required for present reference, be purchased at this time, they will lie in boxes, with much risk of injury, and no possibility of being accessible to the public. Nor, the committee think, will it be prudent or desirable while the main building is in progress, and while temporary arrangements must be made in one of the wings for the reception of such works as by purchase, by exchange, and from other sources, shall have accumulated in the library, to open that provisional library to the public. Few would be likely to resort to it as a place of study, amid the noise and confusion incident to the erection of an extensive building.

Again, though no large sums be spent directly for books, for the present, every appropriation made for the publication of Transactions or other works, to be distributed to learned and scientific societies throughout the world, is a virtual contribution to the library. It cannot be doubted that the exchanges to which, by such extended distribution, the institution will be entitled, will in many cases overpay, in the shape of additions to the library, the cost of the works distributed.

And, finally, it should be remarked, that under the scale of expenditure herein proposed, the sum of a hundred and forty thousand dollars will be added to the original capital of the institution; making an addition to its income of eight thousand four hundred dollars annually, forever; one half of which, by the resolutions hereinafter recited, commonly called the compromise resolutions, will inure to the benefit of the library. It was doubted, at the time of the passage of these resolutions, whether, under their operation, and supposing the entire income of the institution to be the interest from its original capital, the permanent annual appropriation for the purchase of books could exceed from four to five thousand dollars.

By the operation of the present plan it may, therefore, be considered as doubled, or nearly so. The additional four thousand two hundred dollars added by that plan annually, forever, to the library appropriation, is far more than an equivalent for the delay it presupposes, in the accumulation of works not wanted for immediate reference, or present purposes: a delay extending only to the period when suitable permanent arrangements can be made for their reception.

In accordance with the views herein given, the committee append to their report a series of resolutions, of which they recommend the passage.

All which is respectfully submitted.

W. W. SEATON,
ROBERT DALE OWEN,
JOSEPH G. TOTTEN,
Committee.

Resolutions appended to the report of Executive Committee.

Resolved, That the balance on hand, standing to the credit of the chairman of the Executive Committee, on the first of December current, together with all interest accruing to the institution up to the 19th of March next, to wit: the interest due on the first of January next, and on

the 17th of February next, amounting in all to the sum of \$25,646, be appropriated as follows—that is to say:

1. To the publication of the first volume of the Smithsonian Contributions to Science, two thousand dollars; being one thousand dollars in addition to the thousand dollars appropriated for this object by resolution of the 26th of January last.

2. To the publication of one thousand copies of a brief treatise, to be entitled “Hints on Public Architecture,” heretofore authorized to be published by the building committee, to be illustrated with designs of the institution buildings, &c., two thousand dollars; being one thousand dollars in addition to the thousand dollars appropriated for this object by resolution of the 5th of February last.

3. For experiments heretofore authorized to be instituted to determine the economical value of building-materials throughout the United States, five hundred dollars; being the same sum appropriated for that object by resolution of the 1st of March last, but still unexpended.

4. To purchase philosophical and chemical apparatus, one thousand dollars; being a portion of the four thousand dollars appropriated for this object by resolution of the 4th of December last.

5. To part of salary of the Secretary, fifteen hundred dollars.

6. To the building fund, seventeen thousand dollars.

7. To incidental expenses and contingencies, including the expenses of the board and its committees, sixteen hundred and forty-six dollars, or so much of that sum as may be required for these purposes.

Resolved, That during each of the four years next following the 19th of March, 1848, being the four years throughout which the unexpired term of the building contract runs, the proportion of expenditure shall be as follows—that is to say: out of the interest annually accruing to the institution, the sum of fifteen thousand dollars in each year may be appropriated for the current expenses of the institution, exclusive of all expenditures whatever properly belonging to the building fund, but including the expense of the board and its committees, the salaries of officers, including messenger, the expense of all publications, researches, or other similar undertakings, the purchase of books and apparatus, and all incidentals whatever, not connected with the expenditure on the building or grounds. And the remainder of the interest accruing to the institution shall, during each of these four years, be appropriated to the building fund.

Resolved, That it is the deliberate opinion of this board that the entire cost of the institution building—including the complete fitting up and furnishing of the same; lighting and heating, ventilating and draining the same; supplying the same with water; laying out in grass and planting in trees and shrubs the lot, fencing the same, both with the present temporary fence and the ultimate permanent one; also all expenses for superintendence of erection, including the cost of architect’s office and other incidentals; so as to cover all expenses whatever that have been and are to be incurred on the building and on the lot on which it stands, until the completion of the building and of the preparation of the lot, up to the 19th of March, 1852—shall under no circumstances exceed the sum expended thereon up to the 1st of this month, to wit: the sum of twenty-five thousand dollars, and seventeen thousand dollars by a preceding resolution appropriated to the building fund; together with the annually accruing interest over \$15,000 in each of the four years next following the 19th of

March next, as in a former resolution provided, and the further sum of one hundred thousand dollars, to be raised by sale of that amount of the treasury notes now the property of the institution, to be sold at not less than their par value; which said sum of seventeen thousand dollars, together with said annual interest over and above fifteen thousand dollars, and said sum of one hundred thousand dollars now invested in treasury notes, is hereby declared to be the building fund of the institution. And the building committee are hereby expressly instructed and required so to arrange their expenditures on the building and lot, including all items heretofore enumerated, that these expenditures shall not exceed the amount of the said building fund, it being understood that the said building committee have discretionary power in regard to such modifications and alterations as may suggest themselves in the progress of the building, within the limits of the said building fund, but no other. And if, in order to keep within the limits of expenditure by this resolution prescribed, it shall be necessary so to modify the plan as to reduce the cost of some portion of the building, the building committee are hereby authorized and empowered so to do.

Resolved, That the building committee be, and they are hereby instructed, so to arrange the expenditures from the said building fund that the amount paid out of it (exclusive of any balance that may remain, on the 19th of March next, unexpended of the sum of seventeen thousand dollars hereinbefore appropriated) shall not, at the close of any one year of the last four years of the building contract, exceed an average annual expenditure, throughout the said years, of fifty-two thousand dollars, to wit: at the end of one year an expenditure of fifty-two thousand dollars; at the end of two years an expenditure of a hundred and four thousand dollars, and so on.

Resolved, That all appropriations heretofore made by this board for the erection of the institution building, and the preparation of the institution campus, including appropriations made on the 28th of January last for fitting up and furnishing the building, and for lighting and heating the same, also for laying out and planting and fencing the campus, be and the same are hereby rescinded, and the sole appropriations for these objects are hereby declared to be those included in the preceding resolutions.

Resolved, That, for the present, the resolution of the board passed on the fourth December last, and authorizing an appropriation of twenty thousand dollars for the purchase of books, and which said appropriation is to commence from the 1st of January next, shall be strictly construed to authorize only the purchase of such valuable works of reference as the Secretary, or the Building or Executive Committee, may consider useful for present purposes, or otherwise likely to be immediately demanded in the prosecutions of the plan of the institution: *Provided, however*, That nothing in this nor in the preceding series of resolutions contained shall be construed to rescind, or in any way impair the force of, certain resolutions passed by the board on the 26th and 28th of January last, including the following: “*Resolved*, That for the purpose of carrying into effect the two principal modes of executing the act and trust pointed out in the resolutions herewith submitted, the permanent appropriations out of the accruing interest shall, so soon as the buildings are completed, be annually as follows—that is to say:

“First, for the formation of a library composed of valuable works pertaining to all departments of useful knowledge, and for the procuring, ar-

ranging, and preserving of the various collections of the institution, as well of natural history and objects of foreign and curious research, and of elegant art, as others, including salaries and all other general expenses connected with the same, excepting those of the first complete arrangement of all such collections and objects as now belong to the United States in the museum of the institution when completed, together with one-half of the salary of the Secretary, the sum of fifteen thousand dollars.

“Secondly, for the preparation and publication of transactions, reports, and all other publications of the institution, including appropriations for original researches and premiums for original papers, for the delivery of all lectures and payment of all lecturers, and for all general expenses connected with said lectures and publications, together with one-half of the salary of the Secretary, the remainder of the annually accruing interest, it being understood that all general and incidental expenses not specially connected with either of the above two great divisions of the plan of the institution shall be equally divided between them.” And including also the following: “*Resolved*, That it is the opinion and intention of the board, that in the appropriation for the objects of the institution of any surplus of accrued interest which may remain after the completion of the buildings of the institution, an equal division shall be made between the two great branches; that is to say, one-half shall be appropriated to the library and museum fund, and the other half to the fund for original research, publications, and lectures; and that in regard to all other funds hereafter to accrue to the institution, the same division be made:” *And provided also*, That the present series of resolutions shall not be construed to rescind or impair the force of a certain other resolution of the 26th of January last, passed by the board, for the election of an Assistant Secretary, to act as librarian, and whose salary it was therein declared should commence “whenever the building is ready for the reception of the library.” *And provided further*, That nothing in the present resolutions contained shall be construed to take from the Executive Committee the power heretofore, to wit: by resolution of the 26th January, granted to them, to make to the Assistant Secretary elect such compensation as they may deem reasonable for services he may render from time to time, in making catalogues or performing other similar duties for the institution.

Resolved, That there shall hereafter be one regular meeting of the Board of Regents, and no more, unless specially called according to the provisions of the act organizing the institution, and that said annual meeting be held on the first Wednesday in January of each year: *Provided*, That the regular annual meeting for the year eighteen hundred and forty-eight shall be held on the second Wednesday in December of that year.

Report of the Secretary of the Smithsonian Institution to the Board of Regents, December 8, 1847.

GENTLEMEN: A statement of the financial condition of the Smithsonian Institution, and of the progress made in the erection of the building, having been presented to your board by the committees charged with the care of these objects, it becomes my duty, as Secretary of the institution, to give an account of what has been done relative to the development of the plan of organization, and of the steps which have been taken in the way of carrying it into operation.

In accordance with my instructions, I consulted with men of eminence, in the different branches of literature and science, relative to the details of the plan of organization, and arranged the various suggestions offered, in the form of the accompanying programme. This, after having been submitted to a number of persons in whose knowledge and judgment I have confidence, is now presented to the board, with the concurrence of the Committee on Organization, for consideration and provisional adoption. I regret that my engagements have been such as to render it impossible for me to call upon many persons whose counsel would have been valuable, but I hope hereafter to avail myself of their advice in behalf of the institution. I also regret that I could not give the names of those whose suggestions have been adopted in the programme; the impossibility of rendering justice to all, has prevented my attempting this. Many of the suggestions have been offered by different persons, independently of each other; and, indeed, the general plan of the increase and diffusion of knowledge as adopted by the board, is such as would naturally arise in the mind of any person conversant with the history of physical science, and with the means usually employed for its extension and diffusion.

The introduction to the programme contains a series of propositions, suggested by a critical examination of the will of Smithson, to serve as a guide in judging of the fitness of any proposed plan for carrying out the design of the testator. The first section of the programme gives the details of the plan proposed for the increase and diffusion of knowledge by means of publication and original researches. The second section furnishes the details, so far as they can be made out at the present time, of the formation of a library, and a collection of objects of nature and art. These two plans combined, embrace the general propositions adopted by the Board of Regents at their last meeting, as the basis of future operations. It is intended in the proposed plan to harmonize the two modes of increasing and diffusing knowledge, and to give to the institution the widest influence compatible with its limited income. That all the propositions will meet with general approval cannot be expected; and that this organization is the best that could be devised is neither asserted nor believed. To produce *a priori* a plan of organization which shall be found to succeed perfectly in practice, and require no amendment, would be difficult under the most favorable circumstances, and becomes almost impossible where conflicting opinions are to be harmonized, and the definite requirements of the act establishing the institution are to be observed. It is not intended that the details of the organization, as given in the programme, should be permanently adopted without careful trial; they are rather presented as

suggestions to be adopted provisionally, and to be carried into operation gradually and cautiously, with such changes, from time to time, as experience may dictate.

PROGRAMME OF ORGANIZATION OF THE SMITHSONIAN INSTITUTION.

[Presented to the Board of Regents December 8, 1847.]

INTRODUCTION.

General considerations which should serve as a guide in adopting a plan of organization.

1. **WILL OF SMITHSON.** The property is bequeathed to the United States of America, "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."

2. The bequest is for the benefit of mankind. The government of the United States is merely a trustee to carry out the design of the testator.

3. The institution is not a national establishment, as is frequently supposed, but the establishment of an individual, and is to bear and perpetuate his name.

4. The objects of the institution are—1st, to increase, and 2d, to diffuse knowledge among men.

5. These two objects should not be confounded with one another. The first is to increase the existing stock of knowledge by the addition of new truths; and the second to disseminate knowledge, thus increased, among men.

6. The will makes no restriction in favor of any particular kind of knowledge; hence all branches are entitled to a share of attention.

7. Knowledge can be increased by different methods of facilitating and promoting the discovery of new truths, and can be most efficiently diffused among men by means of the press.

8. To effect the greatest amount of good, the organization should be such as to enable the institution to produce results in the way of increasing and diffusing knowledge, which cannot be produced by the existing institutions in our country.

9. The organization should also be such as can be adopted provisionally, can be easily reduced to practice, receive modifications, or be abandoned, in whole or in part, without a sacrifice of the funds.

10. In order to make up for the loss of time occasioned by the delay of eight years in establishing the institution, a considerable portion of the interest which has accrued should be added to the principal.

11. In proportion to the wide field of knowledge to be cultivated, the funds are small. Economy should therefore be consulted in the construction of the building; and not only should the first cost of the edifice be considered, but also the continual expense of keeping it in repair, and of the support of the establishment necessarily connected with it. There should also be but few individuals permanently supported by the institution.

12. The plan and dimensions of the building should be determined by the plan of the organization, and not the converse.

13. It should be recollected that mankind in general are to be benefited by the bequest, and that, therefore, all unnecessary expenditure on local objects would be a perversion of the trust.

11. Besides the foregoing considerations, deduced immediately from the will of Smithson, regard must be had to certain requirements of the act of Congress establishing the institution. These are a library, a museum, and a gallery of art, with a building on a liberal scale to contain them.

SECTION I.

Plan of organization of the institution, in accordance with the foregoing deductions from the will of Smithson.

TO INCREASE KNOWLEDGE. It is proposed—

1. To stimulate men of talent to make original researches, by offering suitable rewards for memoirs containing new truths; and,
2. To appropriate annually a portion of the income for particular researches, under the direction of suitable persons.

TO DIFFUSE KNOWLEDGE. It is proposed—

1. To publish a series of periodical reports on the progress of the different branches of knowledge; and,
2. To publish occasionally separate treatises on subjects of general interest.

DETAILS OF THE PLAN TO INCREASE KNOWLEDGE.

I. *By stimulating researches.*

1. Rewards, consisting of money, medals, &c., offered for original memoirs on all branches of knowledge.
2. The memoirs thus obtained to be published in a series of volumes, in a quarto form, and entitled “Smithsonian Contributions to Knowledge.”
3. No memoir, on subjects of physical science, to be accepted for publication, which does not furnish a positive addition to human knowledge resting on original research; and all unverified speculations to be rejected.
4. Each memoir presented to the institution to be submitted for examination to a commission of persons of reputation for learning in the branch to which the memoir pertains, and to be accepted for publication only in case the report of this commission is favorable.
5. The commission to be chosen by the officers of the institution, and the name of the author, as far as practicable, concealed, unless a favorable decision be made.
6. The volumes of the memoirs to be exchanged for the Transactions of literary and scientific societies, and copies to be given to all the colleges and principal libraries in this country. One part of the remaining copies may be offered for sale; and the other carefully preserved, to form complete sets of the volumes, to supply the demand from new institutions.
7. An abstract, or popular account, of the contents of these memoirs to be given to the public through the annual report of the Regents to Congress.

II. *By appropriating a portion of the income, annually, to special objects of research, under the direction of suitable persons.*

1. The objects, and the amount appropriated, to be recommended by counsellors of the institution.
2. Appropriations in different years to different objects; so that in course of time, each branch of knowledge may receive a share.

3. The results obtained from these appropriations to be published, with the memoirs before mentioned, in the volumes of the Smithsonian Contributions to Knowledge.

4. Examples of objects for which appropriations may be made.

(1.) System of extended meteorological observations, for solving the problem of American storms.

(2.) Explorations in descriptive natural history, and geological, magnetical, and topographical surveys, to collect materials for the formation of a Physical Atlas of the United States.

(3.) Solution of experimental problems, such as a new determination of the weight of the earth, of the velocity of electricity, and of light; chemical analyses of soils and plants; collection and publication of articles of science, accumulated in the offices of government.

(4.) Institution of statistical inquiries with reference to physical, moral, and political subjects.

(5.) Historical researches, and accurate surveys of places celebrated in American history.

(6.) Ethnological researches, particularly with reference to the different races of men in North America; also explorations and accurate surveys of the mounds and other remains of the ancient people of our country.

DETAILS OF THE PLAN FOR DIFFUSING KNOWLEDGE.

I. *By the publication of a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional.*

1. These reports will diffuse a kind of knowledge generally interesting, but which, at present, is inaccessible to the public. Some of the reports may be published annually, others at longer intervals, as the income of the institution, or the changes in the branches of knowledge, may indicate.

2. The reports are to be prepared by collaborators, eminent in the different branches of knowledge.

3. Each collaborator to be furnished with the journals and publications, domestic and foreign, necessary to the compilation of his report; to be paid a certain sum for his labors, and to be named on the title-page of the report.

4. The reports to be published in separate parts, so that persons interested in a particular branch can procure the parts relating to it, without purchasing the whole.

5. These reports may be presented to Congress, for partial distribution; the remaining copies to be given to literary and scientific institutions, and sold to individuals for a moderate price.

The following are some of the subjects which may be embraced in the reports.

I. PHYSICAL CLASS.

1. Physics, including astronomy, natural philosophy, chemistry, and meteorology.

2. Natural history, including botany, zoology, geology, &c.

3. Agriculture.

4. Application of science to arts.

II. MORAL AND POLITICAL CLASS.

5. Ethnology, including particular history, comparative philology, antiquities, &c.
6. Statistics and political economy.
7. Mental and moral philosophy.
8. A survey of the political events of the world ; penal reform, &c.

III. LITERATURE AND THE FINE ARTS.

9. Modern literature.
10. The fine arts, and their application to the useful arts.
11. Bibliography.
12. Obituary notices of distinguished individuals.

II. *By the publication of separate treatises on subjects of general interest.*

1. These treatises may occasionally consist of valuable memoirs, translated from foreign languages, or of articles prepared under the direction of the institution, or procured by offering premiums for the best exposition of a given subject.

2. The treatises should in all cases be submitted to a commission of competent judges previous to their publication.

3. As examples of these treatises, expositions may be obtained of the present state of the several branches of knowledge mentioned in the table of reports. Also of the following subjects, suggested by the Committee on Organization, viz: the statistics of labor, the productive arts of life, public instruction, &c.

SECTION II.

Plan of organization, in accordance with the terms of the resolutions of the Board of Regents, providing for the two modes of increasing and diffusing knowledge.

1. The act of Congress establishing the institution contemplated the formation of a library and a museum; and the Board of Regents, including these objects in the plan of organization, resolved to divide the income into two equal parts.

2. One part to be appropriated to increase and diffuse knowledge by means of publications and researches, agreeably to the scheme before given. The other part to be appropriated to the formation of a library and a collection of objects of nature and of art.

3. These two plans are not incompatible with one another.

4. To carry out the plan before described, a library will be required, consisting, 1st, of a complete collection of the transactions and proceedings of all the learned societies in the world; 2d, of the more important current periodical publications, and other works necessary in preparing the periodical reports.

5. The institution should make special collections, particularly of objects to verify its own publications.

6. Also a collection of instruments of research in all branches of experimental science.

7. With reference to the collection of books, other than those mentioned above, catalogues of all the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not to be found in the United States.

8. Also catalogues of memoirs, and of books in foreign libraries, and other materials, should be collected for rendering the institution a centre of bibliographical knowledge, whence the student may be directed to any work which he may require.

9. It is believed that the collections in natural history will increase by donation, as rapidly as the income of the institution can make provision for their reception, and therefore it will seldom be necessary to purchase any articles of this kind.

10. Attempts should be made to procure for the gallery of arts casts of the most celebrated articles of ancient and modern sculpture.

11. The arts may be encouraged by providing a room, free of expense, for the exhibition of the objects of the Art-Union and other similar societies.

12. A small appropriation should annually be made for models of antiquities, such as those of the remains of ancient temples, &c.

13. For the present, or until the building is fully completed, besides the Secretary, no permanent assistant will be required, except one, to act as librarian.

14. The duty of the Secretary will be the general superintendence, with the advice of the Chancellor and other members of the establishment, of the literary and scientific operations of the institution; to give to the Regents annually an account of all the transactions; of the memoirs which have been received for publication; of the researches which have been made; and to edit, with the assistance of the librarian, the publications of the institution.

15. The duty of the Assistant Secretary, acting as librarian, will be, for the present, to assist in taking charge of the collections, to select and purchase, under the direction of the Secretary and a committee of the board, books and catalogues, and to procure the information before mentioned; to give information on plans of libraries, and to assist the Secretary in editing the publications of the institution and in the other duties of his office.

16. The Secretary and his assistants, during the session of Congress, will be required to illustrate new discoveries in science, and to exhibit new objects of art; also distinguished individuals should be invited to give lectures on subjects of general interest.

17. When the building is completed, and when, in accordance with the act of Congress, the charge of the National Museum is given to the Smithsonian Institution, other assistants will be required.

Explanations and illustrations of the programme.

Though the leading propositions of the programme have been fully discussed by the board, yet it will be important to offer some remarks in explanation and illustration of them in their present connexion.

That the institution is not a national establishment, in the sense in which institutions dependent on the government for support are so, must be evident when it is recollected that the money was not absolutely given to the United States, but intrusted to it for a special object, namely: the establishment of an institution for the benefit of men, to bear the name of the donor, and, consequently, to reflect upon his memory the honor of all the good which may be accomplished by means of the bequest. The operations of the Smithsonian Institution ought, therefore, to be mingled as little as possible with those of the government, and its funds should be applied exclusively and faithfully to the increase and diffusion of knowledge among men.

That the bequest is intended for the benefit of men in general, and that its influence ought not to be restricted to a single district, or even nation, may be inferred not only from the words of the will, but also from the character of Smithson himself; and I beg leave to quote, from a scrap of paper in his own hand, the following sentiment bearing on this point: "The man of science has no country: the world is his country—all men, his countrymen." The origin of the funds, the bequest of a foreigner, should also preclude the adoption of a plan which does not, in the words of Mr. Adams, "spread the benefits to be derived from the institution not only over the whole surface of this Union, but throughout the civilized world." "Mr. Smithson's reason for fixing the seat of his institution at Washington obviously was, that *there* is the seat of government of the United States, and *there* the Congress by whose legislation, and the Executive through whose agency, the trust committed to the honor, intelligence, and good faith of the nation, is to be fulfilled." The centre of operations being permanently fixed at Washington, the character of this city for literature and science will be the more highly exalted in proportion as the influence of the institution is more widely diffused.

That the terms *increase* and *diffusion* of knowledge are logically distinct, and should be literally interpreted with reference to the will, must be evident when we reflect that they are used in a definite sense, and not as mere synonymes, by all who are engaged in the pursuits to which Smithson devoted his life. In England there are two classes of institutions, founded on the two ideas conveyed by these terms. The Royal Society, the Astronomical, the Geological, the Statistical, the Antiquarian Societies, all have for their object the increase of knowledge; while the London Institution, the Mechanics' Institution, the Surry Institution, the Society for the Diffusion of Religious Knowledge, the Society for the Diffusion of Useful Knowledge, are all intended to diffuse or disseminate knowledge among men. In our own country, also, the same distinction is observed in the use of the terms by men of science. Our colleges, academies, and common schools, are recognised as institutions partially intended for the diffusion of knowledge, while the express object of some of our scientific societies is the promotion of the discovery of new truths.

The will makes no restriction in favor of any particular kind of knowledge; though propositions have been frequently made for devoting the funds exclusively to the promotion of certain branches of science having more immediate application to the practical arts of life, and the adoption of these propositions has been urged on the ground of the conformity of such objects to the pursuits of Smithson; but an examination of his writings will show that he excluded from his own studies no branch of general

knowledge, and that he was fully impressed with the important philosophical fact, that all subjects of human thought relate to one great system of truth. To restrict, therefore, the operations of the institution to a single science or art, would do injustice to the character of the donor, as well as to the cause of general knowledge. If preference is to be given to any branches of research, it should be to the higher, and apparently more abstract; to the discovery of new principles, rather than of isolated facts. And this is true even in a practical point of view. Agriculture would have forever remained an empirical art, had it not been for the light shed upon it by the atomic theory of chemistry; and incomparably more is to be expected as to its future advancement from the perfection of the microscope, than from improvements in the ordinary instruments of husbandry.

The plan of increasing and diffusing knowledge, presented in the first section of the programme, will be found in strict accordance with the several propositions deduced from the will of Smithson, and given in the introduction. It embraces, as a leading feature, the design of interesting the greatest number of individuals in the operations of the institution, and of spreading its influence as widely as possible. It forms an active organization, exciting all to make original researches who are gifted with the necessary power, and diffusing a kind of knowledge, now only accessible to the few, among all those who are willing to receive it. In this country, though many excel in the application of science to the practical arts of life, few devote themselves to the continued labor and patient thought necessary to the discovery and development of new truths. The principal cause of this want of attention to original research, is the want, not of proper means, but of proper encouragement. The publication of original memoirs and periodical reports, as contemplated by the programme, will act as a powerful stimulus on the latent talent of our country, by placing in bold relief the real laborers in the field of original research, while it will afford the best materials for the use of those engaged in the diffusion of knowledge.

The advantages which will accrue from the plan of publishing the volumes of the Smithsonian Contributions to Knowledge, are various. In the first place, it will serve to render the name of the founder favorably known wherever literature and science are cultivated, and to keep it in continual remembrance with each succeeding volume, as long as knowledge is valued. A single new truth, first given to the world through these volumes, will forever stamp their character as a work of reference. The contributions will thus form the most befitting monument to perpetuate the name of one whose life was devoted to the increase of knowledge, and whose ruling passion, strong in death, prompted the noble bequest intended to facilitate the labors of others in the same pursuit.

Again, the publication of a series of volumes of original memoirs will afford to the institution the most ready means of entering into friendly relations and correspondence with all the learned societies in the world, and of enriching its library with their current transactions and proceedings. But perhaps the most important effect of the plan will be that of giving to the world many valuable memoirs, which, on account of the expense of the illustrations, could not be otherwise published. Every one who adds new and important truths to the existing stock of knowledge, must be of necessity, to a certain degree, in advance of his age. Hence the number of readers and purchasers of a work is generally in the inverse

ratio of its intrinsic value; and consequently, authors of the highest rank of merit are frequently deterred from giving their productions to the world on account of the pecuniary loss to which the publication would subject them. When our lamented countryman, Bowditch, contemplated publishing his commentary on *La Place*, he assembled his family and informed them that the execution of this design would sacrifice one-third of his fortune, and that it was proper his heirs should be consulted on a subject which so nearly concerned them. The answer was worthy of the children of such a father: "We value," said they, "your reputation more than your money." Fortunately, in this instance, the means of making such a sacrifice existed; otherwise one of the proudest monuments of American science could not have been given to the world. In the majority of cases, however, those who are most capable of extending human knowledge are least able to incur the expense of the publication. Wilson, the American Ornithologist, states, in a letter to Michaux, that he has sacrificed everything to publish his work: "I have issued," he says, "six volumes, and am engaged on the seventh, but as yet I have not received a single cent of the proceeds." In an address on the subject of natural history, by one of our most active cultivators of this branch of knowledge, we find the following remarks, which are directly in point: "Few are acquainted with the fact that from the small number of scientific works sold, and the great expense of plates, our naturalists not only are not paid for their labors, but suffer pecuniary loss from their publications. Several works on different branches of zoology, now in the course of publication, will leave their authors losers by an aggregate of \$15,000. I do not include in this estimate works already finished—one, for instance, the best contribution to the natural history of man extant, the publication of which will occasion its accomplished author a loss of several thousand dollars. A naturalist is extremely fortunate if he can dispose of 200 copies of an illustrated work, and the number of copies printed rarely exceeds 250." It may be said that these authors have their reward in the reputation which they thus purchase; but reputation should be the result of the talents and labor expended in the production of a work, and should not in the least depend upon the fact that the author is able to make a pecuniary sacrifice in giving the account of his discoveries to the public.

Besides the advantage to the author of having his memoir published in the *Smithsonian Contributions* free of expense, his labors will be given to the world with the stamp of approval of a commission of learned men; and his merits will be generally made known through the reports of the institution. Though the premiums offered may be small, yet they will have considerable effect in producing original articles. Fifty or a hundred dollars awarded to the author of an original paper, will, in many instances, suffice to supply the books, or to pay for the materials, or the manual labor required, in prosecuting the research.

There is one proposition of the programme which has given rise to much discussion, and which, therefore, requires particular explanation; I allude to that which excludes from the contributions all papers consisting merely of unverified speculations on subjects of physical science. The object of this proposition is to obviate the endless difficulties which would occur in rejecting papers of an unphilosophical character; and though it may in some cases exclude an interesting communication, yet the strict observance of it will be found of so much practical importance that it cannot be dis-

pensed with. It has been supposed, from the adoption of this proposition, that we are disposed to undervalue abstract speculations: on the contrary, we know that all the advances in true science—namely, a knowledge of the laws of phenomena—are made by provisionally adopting well-conditioned hypotheses, the product of the imagination, and subsequently verifying them by an appeal to experiment and observation. Every new hypothesis of scientific value must not only furnish an exact explanation of known facts, but must also enable us to predict, in kind and quantity, the phenomena which will be exhibited under any given combination of circumstances. Thus, in the case of the undulatory hypothesis of light, it was inferred, as a logical consequence, that if the supposition were true that light consisted of waves of an ethereal medium, then two rays of light, like two waves of water under certain conditions, should annihilate each other, and darkness be produced. The experiment was tried, and the anticipated result was obtained. It is this exact agreement of the deduction with the actual result of experience that constitutes the verification of an hypothesis, and which alone entitles it to the name of a theory, and to a place in the Transactions of a scientific institution. It must be recollected that it is much easier to speculate than to investigate, and that very few of all the hypotheses imagined are capable of standing the test of scientific verification.

For the practical working of the plan for obtaining the character of a memoir, and the precaution taken before it is accepted for publication, I would refer to the correspondence, given in a subsequent part of this report, relative to the memoir now in process of publication by the institution. As it is not our intention to interfere with the proceedings of other institutions, but to co-operate with them, so far as our respective operations are compatible, communications may be referred to learned societies for inspection, as in the case of the above mentioned memoir, and abstracts of them given to the world through the bulletins of these societies, while the details of the memoirs and their expensive illustrations are published in the volumes of the Smithsonian Contributions. The officers of several learned societies in this country have expressed a willingness to co-operate in this way.

Since original research is the most direct way of increasing knowledge, it can scarcely be doubted that a part of the income of the bequest should be appropriated to this purpose, provided suitable persons can be found, and their labors be directed to proper objects. The number, however, of those who are capable of discovering scientific principles is comparatively small; like the poet, they are “born, not made,” and, like him, must be left to choose their own subject, and wait the fitting time of inspiration. In case a person of this class has fallen on a vein of discovery, and is pursuing it with success, the better plan will be to grant him a small sum of money to carry on his investigations, provided they are considered worthy of assistance by competent judges. This will have the double effect of encouraging him in the pursuit, and of facilitating his progress. The institution, however, need not depend upon cases of this kind, even if they were more numerous than they are, for the application of its funds in the line of original research. There are large fields of observation and experiment, the cultivation of which, though it may afford no prospect of the discovery of a principle, can hardly fail

to produce results of importance both in a practical and a theoretic point of view. As an illustration of this remark, I may mention the case of the investigations made a few years ago by committees of the Franklin Institute, of Philadelphia. The Secretary of the Treasury of the United States placed at the disposal of this society a sum of money, for the purpose of making experiments with reference to the cause of the explosion of steam-boilers. A committee of the society was chosen for this purpose, which adopted the ingenious plan of writing to all persons in the United States engaged in the application of steam, and particularly to those who had observed the explosion of a steam-boiler. In this way opinions and suggestions in great variety, as to the cause of explosions, were obtained. The most plausible of these were submitted to the test of experiment: the results obtained were highly important, and are to be found favorably mentioned in every systematic work on the subject of steam which has appeared, in any language, within the last few years. New and important facts were established; and, what was almost of as much consequence, errors which had usurped the place of truth were dethroned.

In the programme, examples are given of a few subjects of original research to which the attention of the institution may be turned. I will mention one in this place, which, in connexion with the contents of our first memoir, may deserve immediate attention. I allude to a small appropriation made annually for researches with reference to the remains of the ancient inhabitants of our country. This is a highly interesting field, and what is done in regard to it should be done quickly. Every year the progress of civilization is obliterating the ancient mounds, cities and villages are rising on the spots they have so long occupied undisturbed, and the distinctive marks of these remains are every year becoming less and less legible.

In carrying out the spirit of the plan adopted, namely, that of affecting men in general by the operations of the institution, it is evident that the principal means of diffusing knowledge must be the *press*. Though lectures should be given in the city in which Smithson has seen fit to direct the establishment of his institution, yet, as a plan of general diffusion of knowledge, the system of lectures would be entirely inadequate; every village in our extended country would have a right to demand a share of the benefit, and the income of the institution would be insufficient to supply a thousandth part of the demand. It is also evident that the knowledge diffused should, if possible, not only embrace all branches of general interest, so that each reader might find a subject suited to his taste, but also that it should differ in kind and quality from that which can be readily obtained through the cheap publications of the day. These requisites will be fully complied with in the publications of the series of reports proposed in the programme. A series of periodicals of this kind, posting up all the discoveries in science from time to time, and giving a well digested account of all the important changes in the different branches of knowledge, is a desideratum in the English language. The idea is borrowed from a partial plan of this kind in operation in Sweden and Germany; and for an example of what the work should be, I would refer to the annual report to the Swedish Academy of its perpetual Secretary, Berzelius, on physical science. The reports can be so prepared as to be highly interesting to the general reader, and at the same time of great importance to the exclusive

cultivator of a particular branch of knowledge. Full references should be given, in foot-notes, to the page, number, or volume of the work from which the information was obtained, and where a more detailed account can be found. It is scarcely necessary to remark, that the preparation of these reports should be intrusted only to persons profoundly acquainted with the subjects to which they relate—namely, to those who are devoted to particular branches, while they possess a knowledge of general principles. Sufficient explanations should be introduced to render the report intelligible to the general reader, without destroying its scientific character. Occasionally reports may be obtained from abroad—as, for example, accounts of the progress of certain branches of knowledge in foreign countries—and these may be translated, if necessary, and incorporated into other reports, by some competent person in this country.

Besides the reports on the progress of knowledge, the programme proposes to publish occasionally brief treatises on particular subjects. There are always subjects of general interest, of which brief expositions would be of much value. The preparation of these, however, should be intrusted to none but persons of character and reputation, and should be subjected to a revision by competent and responsible judges before they are given to the public. They may be presented in the form of reports on the existing state of knowledge relative to a given subject, and may sometimes consist of memoirs and expositions of particular branches of literature and science, translated from foreign languages. The reports and treatises of the institution, sold at a price barely sufficient to pay the expense of printing, will find their way into every school in our country, and will be used not as first lessons for the pupil, but as sources of reliable information for the teacher.

The second section of the programme gives, so far as they have been made out, the details of the part of the plan of organization directed by the act of Congress establishing the institution. The two plans, namely, that of publication and original research, and that of collections of objects of nature and art, are not incompatible, and may be carried on harmoniously with each other. The only effect which they will have on one another is that of limiting the operation of each, on account of the funds given to the other. Still, with a judicious application, and an economical expenditure of the income, and particularly by rigidly observing the plan of finance, suggested by Dr. Bache, in the construction of the building, much good may be effected in each of the two branches of the institution. To carry on the operations of the first, a working library will be required, consisting of the past volumes of the transactions and proceedings of all the learned societies in every language. These are the original sources from which the most important principles of the positive knowledge of our day have been drawn. We shall also require a collection of the most important current literature and science for the use of the collaborators of the reports; most of these, however, will be procured in exchange for the publications of the institution, and therefore will draw but little from the library fund. For other suggestions relative to the details of the library, I would refer you to the annexed communication from Professor Jewett, Assistant Secretary, acting as librarian. (See appendix No. 1.)

The collections of the institution, as far as possible, should consist of such articles as are not elsewhere to be found in this country, so that the

visitors at Washington may see new objects, and the spirit of the plan be kept up, of interesting the greatest possible number of individuals. A perfect collection of all objects of nature and of art, if such could be obtained and deposited in one place, would form a museum of the highest interest; but the portion of the income of the bequest which can be devoted to the increase and maintenance of the museum, will be too small to warrant any attempt towards an indiscriminate collection. It is hoped that in due time other means may be found of establishing and supporting a general collection of objects of nature and art at the seat of the general government, with funds not derived from the Smithsonian bequest. For the present, it should be the object of the institution to confine the application of the funds, first, to such collections as will tend to facilitate the study of the memoirs which may be published in the Contributions, and to establish their correctness; secondly, to the purchase of such objects as are not generally known in this country, in the way of art, and the illustration of antiquities, such as models of buildings, &c.; and, thirdly, to the formation of a collection of instruments of physical research, which will be required both in the illustration of new physical truths, and in the scientific investigations undertaken by the institution.

Much popular interest may be awakened in favor of the institution at Washington, by throwing the rooms of the building open, on stated evenings during the session of Congress, for literary and scientific assemblies, after the manner of the weekly meetings of the Royal Institution in London. At these meetings, without the formality of a regular lecture, new truths in science may be illustrated, and new objects of art exhibited. Besides these, courses of lectures may be given on particular subjects by the officers of the institution, or by distinguished individuals invited for the purpose.

Commencement of the operations of the institution.

I was authorized, in connexion with the Committee on Organization, to commence the publication of the Smithsonian Contributions to Knowledge, and to receive any memoir which might be presented on any subject, provided it was found, on examination, to furnish an interesting addition to the sum of human knowledge, resting on original research. The first memoir presented, and found to be of the character prescribed by the resolution of the board, was one on the remains of the ancient inhabitants of the North American continent. It contains the result of several years' labor in the survey and exploration of the mounds and earth-works of the Mississippi valley, and will furnish a highly interesting addition to the antiquities of our country, which could not have been given to the world, but for the timely aid extended to it by this institution. The memoir was referred to the American Ethnological Society, with a request that a committee of its members might be appointed to examine and report on its character, as to fitness for publication in the Smithsonian Contributions to Knowledge. On the favorable report of this committee, and on the responsibility of the society, the memoir has been accepted for publication. The following correspondence will serve to give an account of the work, and to illustrate the manner in which it is proposed to submit the papers which may be presented for publication to a commission of competent judges.

CORRESPONDENCE RELATIVE TO THE ACCEPTANCE FOR PUBLICATION OF THE
ETHNOLOGICAL MEMOIR OF MESSRS. SQUIER AND DAVIS.

From Messrs. Squier and Davis to the Secretary of the Smithsonian Institution.

CHILLICOTHE, O., May 15, 1847.

DEAR SIR: It is proposed in the recognised plan of organization of the Smithsonian Institution, of which you are the executive officer, to publish, under the title of "*Smithsonian Contributions to Knowledge*," such original papers and memoirs "as shall constitute valuable additions to the sum of human knowledge." Under the belief that it falls legitimately within the scope of the above plan, the undersigned herewith submit for acceptance and publication, subject to the prescribed rules of the institution, a MS. memoir, entitled "*ANCIENT MONUMENTS OF THE MISSISSIPPI VALLEY, comprising the results of Extensive Original Surveys and Explorations*:" by E. G. SQUIER and E. H. DAVIS." The extent of these investigations, and their general character, are sufficiently indicated in the prefatory remarks to the volume.

With high consideration, we are truly yours,

E. GEO. SQUIER.
E. H. DAVIS.

JOSEPH HENRY, Esq.,
Secretary Smithsonian Institution.

From the Secretary of the Smithsonian Institution to the President of the American Ethnological Society.

WASHINGTON, June 2, 1847.

DEAR SIR: I am authorized by the Regents of the Smithsonian Institution to publish, in the numbers of the "*Smithsonian Contributions to Knowledge*," any memoir which may be presented for this purpose, provided that, on careful examination by a commission of competent judges, the memoir shall be found to furnish a new and interesting addition to knowledge, resting on original research. The accompanying memoir, entitled "*Ancient Monuments of the Mississippi Valley*," &c., having been presented for publication, I beg leave to refer the same, through you, to the American Ethnological Society, with the request that a committee of the members may be appointed to examine and report on its character, in reference to the particulars above mentioned. If the report of the committee be favorable, the memoir will be accepted for publication; full confidence being placed in the ability of the committee to judge of the character of the article, and in their caution in making up their opinion.

I have the honor to be, very respectfully, your obedient servant,

JOSEPH HENRY,
Secretary Smithsonian Institution.

HON. ALBERT GALLATIN,
President American Ethnological Society.

Extract of a letter from the President of the American Ethnological Society to the Secretary of the Smithsonian Institution.

"NEW YORK, June 12, 1847.

"DEAR SIR: I have the honor to enclose a copy of the proceedings and resolutions of the New York Ethnological Society upon the MS. work on American Antiquities, by Messrs. E. G. Squier and E. H. Davis, submitted with your letter of the 2d inst.

"I approve entirely of the resolutions and recommendations of the society.

"Whatever may be the intrinsic value of the remains of former times which are found in the United States, it is necessary that they should at least be correctly described, and that existing gross errors should be corrected; and I repeat my conviction that, though ardent, Messrs. Squier and Davis are animated by that thorough love of truth which renders their researches worthy of entire confidence.

"I have the honor to be, &c.,

"ALBERT GALLATIN.

"Prof. J. HENRY,

"*Secretary of Smithsonian Institution.*"

At a regular meeting of the American Ethnological Society, held at the house of the Hon. ALBERT GALLATIN, on the evening of the 4th of June, the president laid before the members a communication from Professor J. HENRY, Secretary of the Smithsonian Institution, transmitting, for the examination and opinion of the society, a MS. work on the Ancient Aboriginal Monuments of the United States. On motion, the letter and accompanying MS. were referred to a committee consisting of EDWARD ROBINSON, D. D., JOHN R. BARTLETT, Professor W. W. TURNER, SAMUEL G. MORTON, M. D., and Hon. GEORGE P. MARSH, to report upon the same. At a subsequent meeting of the society, this committee submitted the following report and resolutions, which were unanimously accepted and adopted :

REPORT.

The committee of the American Ethnological Society, to which was referred the communication of the Secretary of the Smithsonian Institution, transmitting a manuscript work, entitled "*ANCIENT MONUMENTS OF THE MISSISSIPPI VALLEY, comprising the results of Extensive Original Surveys and Explorations,*" by E. G. SQUIER and E. H. DAVIS, beg leave to report, that

They have examined the work in question, and regard it not only as a new and interesting, but as an eminently valuable addition to our stock of knowledge on a subject little understood, but in which is felt a deep and constantly increasing interest, both in our country and abroad. In their judgment, the work is worthy of the subject, and highly creditable to the authors. Its chief features are, a scientific arrangement, simplicity, and directness of statement, and legitimate deduction from facts, while there is no attempt at mere speculation or theory. If published, it will be an enduring monument to connect the names of the investigators in honorable and lasting remembrance with the great subject of American Archæology.

The existence and progress of these investigations were made known to the society by correspondence early in the year 1846; and in June of that year

specimens of the relics recovered, accompanied by numerous maps and plans of ancient earthworks and sectional views of the mounds from which the remains were taken, were laid before the society by Mr. Squier in person. These excited deep interest and surprise in all who saw them; and the society immediately took measures to encourage further investigation, and secure the publication, under its own auspices, of the important results already obtained. A few months later, the chairman of the present committee, being in Ohio, was enabled, through the kindness of Messrs. Squier and Davis, to visit several of the more important monuments in the immediate vicinity of Chillicothe, and, among these, "Mound City," so called, from which very many of the minor relics and specimens were procured. He was struck with the accuracy of the plans and drawings, as well as of the accounts which had been laid before the society, and bears full testimony to the fidelity and integrity with which the process of investigation and delineation has been conducted.

During the last and present season the researches of these gentlemen have been actively prosecuted and widely extended, and the above work, largely illustrated, comprising the results, has been prepared. These results are so numerous and important, and consequently such is the extent and magnitude of the work itself, as to put its publication beyond any means which the society can command. Under these circumstances, your committee learn with pleasure that preliminary arrangements have been made for its publication by the Smithsonian Institution, among its "Contributions to Knowledge." It can only be a matter of sincere gratification to this society to see that which it cannot itself accomplish for the history and antiquities of our country, taken up and carried out under such favorable auspices; and they cannot but rejoice that an opportunity is thus afforded to that noble institution of opening its high career by fostering scientific researches into the interesting problems connected with the Ante-Columbian history and Aboriginal monuments of our own country.

In view of these facts, your committee would recommend the adoption of the following resolutions by the society:

Resolved, That this society regard the researches of Messrs. Squier and Davis as of very great importance in American Archæology, and as casting much light upon our aboriginal antiquities, especially upon the character and habits of the earliest races which had their seat in the Mississippi valley.

Resolved, That we regard the work prepared upon this subject as one of great general interest, and as worthy to be adopted for publication by the Smithsonian Institution, both as resting on original researches, and as affording remarkable illustrations of the history of the American continent.

Your committee would also append to this report the accompanying letters from Samuel G. Morton, M. D., of Philadelphia, and Hon. George P. Marsh, of Vermont, both members of this society, and joint members of this committee.

All of which is respectfully submitted.

EDWARD ROBINSON,)
JOHN R. BARTLETT, } *Committee.*
W. W. TURNER, }

NEW YORK, June, 1847.

NEW YORK, June 9, 1847.

I have examined with much interest and attention the manuscripts, drawings, and ancient relics in the possession of Mr. E. G. Squier, and am happy to say that my previous impressions concerning the value of the researches of that gentleman and his associate are fully confirmed. It is fortunate for the cause of American Archæology that the first systematic attempt at its elucidation

should have been conceived and executed in so truly philosophical a spirit; and rich as this age already is in antiquarian lore, it has, I think, received few more important contributions than that which the enlightened and generous zeal of these two private gentlemen is about to confer upon it. The Smithsonian collections could not begin with a more appropriate or creditable essay; and I hope that every facility may be afforded to the authors in bringing before the public the results of their honorable labors in as suitable a form and with as little delay as possible.

GEO. P. MARSH.

PHILADELPHIA, *June 8, 1847.*

As a member of the committee of the American Ethnological Society, appointed to report on the memoir on American Archæology, by Messrs. E. G. SQUIER and E. H. DAVIS, I have great pleasure in saying that after a careful and repeated inspection of the materials in the hands of those gentlemen, I am convinced they constitute by far the most important contribution to the Archæology of the United States that has ever been offered to the public. The number and accuracy of their plans, sketches, &c., have both interested and surprised me, and it is gratifying to learn that the preliminary arrangements have been made for their publication under the honorable auspices of the Smithsonian Institution.

SAML. GEORGE MORTON.

The memoirs of Messrs. Squier and Davis will occupy the greater portion, if not the whole, of the first volume of the Contributions. The illustrations will consist of fifty-five quarto plates of the mounds, earthworks, and maps of the adjacent country; also, of about two hundred wood cuts, principally delineations of the various articles found in the mounds. Those who consider no branch of knowledge of any value but such as relates to the immediate gratification of our physical wants, have objected to the acceptance of this memoir as one of the first publications of the institution; but it must be recollected that the will of Smithson makes no restriction in favor of any particular kind of knowledge, and that each branch is, therefore, entitled to a share of his bequest. The Ethnological memoir of Messrs. Squier and Davis was the first, of the proper character, presented for publication, and hence it was entitled to the first place in the series of Smithsonian Contributions. Besides this, it furnishes an addition to a branch of knowledge which is at this time occupying the attention of a large class of minds, and which cannot fail to be interesting to every intelligent person who would learn something of the changes to which man has been subjected.

One of the volumes of the Contributions will contain a sketch of the life of Smithson, by the Chancellor. The materials for this have been collected from the several volumes of the Transactions of the Royal Society, and the scientific journals of the beginning of the present, and the latter part of the last century. The first volume will be published as soon as the wood-cuts and plates, now in the course of preparation, are finished.

Besides the memoirs before mentioned, a number of others have been presented, some of which, though apparently of interest, and the product of thought and labor, were not of the character required by the resolution of the board, and these have either been returned to the authors, or are in

the possession of the Secretary. A number of others have also been provisionally adopted, or are in the course of preparation. Some of these are on the most abstruse parts of physical science, and all will do honor to the intellectual character of our country. Though the number of original memoirs which will be found worthy of a place in the Contributions will probably not be large, yet it will, perhaps, be best to set apart a definite portion of the income of the bequest—as, for example, at present three or four thousand dollars annually—to defray the expense of this part of the plan of increasing knowledge. A considerable portion, however, of the sum thus expended will be returned to the institution in the form of additions to its library. I may also suggest, in this place, the propriety of the adoption, by the board, of a resolution inviting all engaged in original research to send the results of their labors for publication in the Smithsonian Contributions.

The board also directed me to commence the collection of apparatus, and I accordingly sent orders to Europe, to the amount of twelve hundred dollars, for the purchase of such articles as could not be procured in the United States. Most of the instruments have been received, and will be found of importance, not only in the way of original research, but also in illustrating some of the most interesting and recent phenomena of physical science, as well as serving as samples for imitation to the artists of this country. It was thought that these articles would be admitted free of duty, and a petition to this effect was presented to the Secretary of the Treasury; but, though this officer is well known to be much interested in the prosperity of the institution, such is the nature of the law that the duty could not be remitted.

There is an article of apparatus which, within a few years past, has opened almost a new world of research in the phenomena of life and organization, the use of which is now indispensable in advancing our knowledge of physiology and its kindred branches of science. I allude to the achromatic microscope, to increase the power of which, the artists of Germany, France, and England have vied with each other. On account of the small number of persons who are capable of constructing the proper lenses, the best specimens of this instrument are very scarce in this country, and can be procured only at a great expense. Under these circumstances, it was a matter of much interest to learn, from a source which could be relied upon, that an individual in the interior of the State of New York had successfully devoted himself to the study of the microscope, and that he was able to produce instruments of this kind which would compete with the best of those constructed in Europe. In order to do justice to the talents and labors of this person, as well as to furnish the institution with a valuable instrument of research, I requested him to construct a microscope, to be paid for out of the funds for the purchase of apparatus, provided that a commission, appointed by myself, should find it capable of producing certain effects. This proposition was accepted, and the result will probably be given to the board at the next meeting.

Preparations have also been made for instituting various lines of physical research. Among the subjects mentioned in the programme as an example for the application of the funds of the institution, is terrestrial magnetism. I need scarcely say that this is a subject not only of high interest in

a theoretical point of view, but also in its direct reference to navigation and the various geodetical operations of civil and military life. A resolution of Congress, authorizing the exploration of the mineral lands adjacent to the great lakes, has given to us the means of advancing this branch of knowledge with but little expenditure of the funds of the institution. The Secretary of the Treasury readily agreed to the proposition that there should be added to the mineralogical and geological surveys of these regions, determinations of the dip, the variation, and the intensity of the magnetic forces, provided that the Smithsonian Institution would furnish one set of the instruments, and take charge of the direction of the observations, and of reducing and publishing them. In the survey of the mineral lands in the vicinity of lake Michigan under Dr. Jackson, Dr. Locke, of Cincinnati, has been employed with his own apparatus; and to supply the necessary instruments for the survey in Wisconsin, preliminary steps have been taken to procure other instruments from London.

Another subject of research mentioned in the programme, and which has been urged upon the immediate attention of the institution, is that of an extensive system of meteorological observations, particularly with reference to the phenomena of American storms. Of late years, in our country, more additions have been made to meteorology than to any other branch of physical science. Several important generalizations have been arrived at, and definite theories proposed, which now enable us to direct our attention, with scientific precision, to such points of observation as cannot fail to reward us with new and interesting results. It is proposed to organize a system of observations which shall extend as far as possible over the North American continent; and in order to this, it will be necessary to engage the co-operation of the British government. I have accordingly addressed a letter on this subject to Lieutenant Colonel Sabine, corresponding secretary of the Royal Society, who assures me that, as soon as the plan is fully matured for this country, there will be no difficulty in establishing a system of corresponding observations in the British provinces. I have also addressed letters to several gentlemen distinguished for their attainments in meteorology, asking for suggestions as to the plan of observation; and I beg leave to refer the board to the accompanying report of Prof. Loomis, of New York University, and also to the communication of Prof. Espy, received in answer. (Appendix Nos. 2 and 3.) The former contains an exposition of the advantages which may be derived from the study of meteorology, and what has been done in this branch of science in this country, and what encouragement there is for the further prosecution of the same subject, together with a general plan of operations. The present time appears to be peculiarly auspicious for commencing an enterprise of the proposed kind. The citizens of the United States are now scattered over every part of the southern and western portion of North America, and the extended lines of telegraph will furnish a ready means of warning the more northern and eastern observers to be on the watch for the first appearance of an advancing storm.

All which is respectfully submitted.

JOSEPH HENRY,
Secretary.

To the REGENTS of the *Smithsonian Institution.*

APPENDIX No. 1.

Extract from a communication of Professor Jewett, Assistant Secretary of the institution, acting as librarian.

MY DEAR SIR: As I do not expect to have the pleasure of seeing you again before the meeting of the Regents, I will, with your indulgence, refer to some of the principal matters which will require attention in commencing the library. They would no doubt all occur to you in their order, but I have thought you might find it convenient to have this part of the business in some degree prepared to your hands. A great deal of preparatory work is to be gone through with, before any books can be placed on the shelves.

1. On the plan proposed for the library, it seems to me that the first thing to be done is to make arrangements for obtaining catalogues, printed or in manuscript, of the principal libraries of the United States; to examine these libraries, as far as can be done personally, in order to know their general character, the statistics of their increase, &c.; and to form such alliances with the librarians as will be indispensable in making the library of the institution, in conformity with the suggestion of Dr. Bache, a supplemental one, and a centre of bibliographical reference. Some libraries possess printed catalogues complete nearly down to the present time; others are several years behindhand. It will be necessary to procure manuscript catalogues in continuation of those which have been printed, and to make arrangements for receiving, from month to month, or from year to year, lists of all future accessions. These supplementary catalogues should all be prepared on a uniform plan. The titles should be written on cards of the same size, so that they may be placed together in one alphabetical arrangement, in order to facilitate research. A mark placed on the back of each card will designate the library from which it came. Now, in every library with which we are in correspondence some one must be employed to do this. It would be merely clerk's labor, where the catalogues are properly kept, and no doubt the librarian or assistant might in every case be induced to undertake it for a small compensation.

2. The next thing to be done will be to make arrangements for procuring the books to which we are entitled by the 10th section of the charter of the institution. Unless something be done, this provision, in course of time, will bring in comparatively few books in a year. I have no doubt that publishers generally would readily send their books, if the subject were properly presented to them, and arrangements made by which they could transmit them to Washington without subjecting the institution or themselves to expenses altogether disproportioned to the value of the books. It has occurred to me that perhaps the several district clerks might be induced to attend to the business: it is perhaps legally their duty to do so, but I suppose it would be unsafe to rely upon their performing faithfully such an unexpected duty, unless they received for it some additional compensation. Besides this, a circular might be printed and sent to publishers, setting forth the advantages which would result directly to the cause of letters, and indirectly to themselves, from compliance with this requirement. By these means I think we should obtain nearly all the publications of importance issued from the American press.

3. The selection of books for the first purchase must be made. This will, I suppose, comprise three classes of works: 1. Those which may be immediately needed in the scientific department; 2. Bibliographical works and descriptions, histories and catalogues of similar institutions; and, 3. The general collection, consisting of the memoirs, transactions, and journals of the learned societies of Europe and America. These three classes of books will form a library quite unique, and one of great utility. The catalogue, if it be made with fulness and accuracy, will be a valuable publication. I think, further, that a somewhat extended list of books should be made out for future purchases. These lists should be intrusted to honest and faithful men in some of the principal book marts in Europe, with orders to buy the books whenever they can find them—at say one-half *the ordinary prices*. In this way we should obtain at very low prices great numbers of the books which we shall want. Of course, the same list should not be left with different men. The work should be done with care, and by consultation with the best scholars in the country. It will be difficult to find the necessary bibliographical *helps*. The best collection of them in the country is in the library of the Brown University, but this is very imperfect.

4. The first *purchases* are to be made, and the arrangements for future purchases. These, of course, should not be commenced until the lists are as far completed as they can judiciously be in this country.

5. Another subject contemplated in the programme of organization, and which should receive immediate attention, is the procuring of copies of some of the most celebrated *works of art*. It will probably be best to confine the purchases at first principally to plaster casts of some of the finest specimens of ancient and modern statuary. These can be procured very cheap, and convey, of course, a perfect representation of the original. I have no doubt that for a public institution, and one under national auspices, we could, whenever we desire it, obtain permission to take casts directly from the statues.

The expense of doing so would of course be somewhat greater than that of purchasing such copies as might be found in the market, but a small difference in expense is not to be thought of in such a case. It would further be desirable to commence the purchase of the models of antiquities, such as models in cork of some of the houses, temples, theatres, baths, &c., &c., in Pompeii and Herculaneum. These can be procured at comparatively small prices. Models of every interesting part of Pompeii which has been excavated, presenting in miniature a perfect view of nearly the whole on the scale of 1 foot to 150, might be procured for about \$2,000. It might also be well to procure a few Etruscan vases; also a few antique coins and medals, sufficient to convey some illustration of numismatics, as a subsidiary branch of history. The Regents should of course decide what proportion of the appropriation for collections should each year be expended for these purposes. I will merely remark that \$1,000, or even \$500 at the outset, prudently expended, would procure a very interesting collection.

I have thus stated quite in detail the work which must be done before the library can be ready for use, or rather before any part of it can be placed upon the shelves. Before it can be ready for use, much more is to be done in arranging and cataloguing. To lay properly the foundation of a large

library is a slow work, and much time must necessarily be consumed in producing but small visible results.

I am, my dear sir, very truly, your friend and servant,

C. C. JEWETT.

PROFESSOR HENRY, LL. D.,

Secretary Smithsonian Institution.

APPENDIX No. 2.

*Report on the Meteorology of the United States: By Professor LOOMIS
Submitted to the Secretary of the Smithsonian Institution.*

MY DEAR SIR: Believing that the science of meteorology has now arrived at that stage of advancement in which a more powerful combination of observers is needed to secure any rapid progress, I fully concur in the importance of establishing an extended system of observations under the direction of the Smithsonian Institution, and propose in this report briefly to inquire,

I. What advantages society may expect to derive from the study of meteorology, particularly that branch of it which relates to the phenomena of storms.

II. What has already been done in this country, 1st, towards making the necessary observations; and, 2d, towards deducing from the observations general laws.

III. What encouragement there is to a further prosecution of the same researches; and,

IV. I shall offer a plan for securing these advantages in their fullest extent.

I. Of what importance to society is the study of meteorology?

Very little argument is needed to prove that our comfort and convenience, and not unfrequently our lives and property, are dependent upon meteorological phenomena. This is proverbially true of the mariner. The moment he embarks upon the treacherous sea, he finds himself at the mercy of the winds. His life often depends upon the fidelity with which he watches every change in the aspect of the sky. In a single hour he may exchange the deceptive calm for the fatal tornado. The number of disasters upon the sea is frightful, and is far greater than is generally known. In the gale of December 15, 1839, 89 vessels were wrecked on the Massachusetts coast; and of these, 61 on a single cape. In the great hurricane of 1780, 13 battle-ships were lost, and 16 more dismasted. England and America alone suffer an annual loss from wrecks of more than 1,000 vessels, and nearly one-half of this is on the American coast.

But how can the study of meteorology benefit the sailor? Will it enable him to calm the tempest—to subdue the raging of the sea? This we do not expect; yet, if he can anticipate the approach of a storm even by a few hours, he may generally place himself beyond the reach of its fury. Is it in the power of science to enable the navigator to anticipate the coming tempest? If so, then it would be difficult to name a subject of more vital importance to our commerce. How far this object has been

already attained, and what encouragement there is to expect further discoveries, I shall consider hereafter.

The sailor is not the only person who has an interest in the study of meteorology. Although but a small part of the population of the United States are directly engaged in foreign commerce, yet so important has this department of industry become, and so interwoven with all the business of the country, that there is not a trade or profession which does not feel the shock of any great disaster at sea. Aside from this indirect interest, the farmer is directly dependent upon the weather for the consummation of his plans, almost equally with the sailor. Severe drought or excessive rains, untimely frost or a scorching sun, may blast all the hopes of the husbandman. Here it may be asked, do you expect to produce rain or sunshine at pleasure? Probably not. But if we can anticipate the general character of a season, the farmer may regulate his time of planting or the nature of his crops, so as to be least injuriously affected by unpropitious weather; so that, if we cannot strip the lightning of its power, we may at least direct it harmlessly to the earth.

Again, an extensive series of meteorological observations may prove of immense importance to the scientific physician. It cannot be doubted that the salubrity of a climate is to a great extent dependent upon its meteorology—on its mean temperature, the range of the thermometer, the suddenness of its changes, the moisture of the air, excessive rains or unusual droughts, &c. To trace the connexion between these causes and prevalent diseases, requires an accumulation of precise meteorological observations made in every variety of exposure, and continued for a long period of time. That it is possible to discover such a connexion, if it really exist, cannot admit of a reasonable doubt; nor is it difficult to anticipate the important consequences which must flow from it. To discover the cause of disease is the first step towards a cure; and it is by no means chimerical to suppose that a complete system of meteorological observations throughout the United States might be the means of extending the duration of human life.

It cannot, then, be questioned that meteorology is a subject of the greatest practical importance, *provided* it has any solid foundation for a science. If the laws of storms can be discovered, this knowledge must be of the highest importance to mankind, particularly to those who are employed in navigating the sea. If the prevalent character of a season can be anticipated, it would save the husbandman much bitter disappointment from the failure of his crops. If the influence of climate upon disease could be detected, it might add years to the mean duration of human life. What encouragement there may be to anticipate that these results will ever be attained, I shall consider after inquiring—

II. What has already been done for the promotion of meteorology,

1, In the way of making the necessary observations.

Previous to the year 1819, no combined systematic effort had been made in this country for the promotion of meteorology. Registers had been industriously kept by various private individuals, but they were without any concerted action. In 1819, under the direction of the then Secretary of War, John C. Calhoun, a system of meteorological observations was commenced at the different military posts, which has been continued to the present time. This was a highly important movement, and was prompted by a most liberal spirit. It has furnished us with an approximate knowl-

edge of the mean temperature of a considerable number of stations, many of them remote from the more populous parts of the United States. It should, however, be remembered that the instruments provided never exceeded a thermometer and a rain-gauge; and the observations, therefore, had of necessity a limited range.

In 1825, a similar system of observations was introduced into the State of New York, almost without modification. Each of the academies incorporated by the Board of Regents was furnished with a thermometer and a rain-gauge, and was required to keep a register, after a prescribed form, in order to be entitled to a portion of the public literary fund. This system has now continued for more than twenty years, and the number of academies reporting has increased from ten to forty. The plan was highly creditable to the public spirit and scientific taste of New York. It was a movement in advance of public sentiment in the other States, and the observations were, perhaps, as extensive as it was expedient to undertake at that time. These observations have determined, with considerable accuracy, the mean temperature of the State; and the annual report contains a vast amount of important meteorological statistics.

More recently, Pennsylvania has set an example of the same kind to her sister States. In 1837 the legislature of that State appropriated \$4,000 for the advancement of meteorology; and out of this sum, which was placed at the disposal of a joint committee of the American Philosophical Society and Franklin Institute, a barometer, two common thermometers, a self-registering thermometer, and a rain-gauge, were purchased for each county in the State, to be placed in the hands of some skilful observer who should volunteer to keep a journal of the weather, according to a common form prescribed by the committee. The observations were commenced with little delay, and have been regularly continued. Here are made observations of the barometer and thermometer three times a day; of the self-registering thermometer; the winds estimated for sixteen points of the compass; the depth of rain; and, at some stations, observations of the dew-point.

In the year 1843, the system of observations at the military posts was reorganized upon a scale more in accordance with the claims of science. They now comprise observations of the barometer, attached and external thermometer, wet-bulb thermometer; direction and force of the wind; direction, velocity, and amount of clouds; each at four hours of the day, viz: sunrise, 9 a. m., 3 and 9 p. m.; together with the amount of rain, and the times of its beginning and ending.

Thus it appears we have observations from the general government at about sixty posts, stretching along the entire Atlantic coast, the gulf of Mexico, the Indian territory beyond the Mississippi, and the chain of the northern lakes. Next come the observations of two large States, New York and Pennsylvania. And then we have amateur observers, pretty numerous in New England—scattered more sparingly over the south and west.

I now come to the inquiry, what progress has been made,

2, Towards deducing from these observations general laws.

In the list of philosophers who have contributed to create science out of the crude materials furnished by observation, I shall first mention Mr. Redfield. His first paper on the storms of the Atlantic coast appeared in April, 1831, in volume 20 of the American Journal of Science. This

paper gives a full account of the hurricane of September, 1821, which was traced from the West India islands northward along the whole line of our coast. It contained also a notice of the storm of August 17, 1830, and two or three other storms of the same year. From a comparison of all the observations, Mr. Redfield derived the conclusion that those storms were great whirlwinds. In 1833 he published the following general propositions, as embodying the results of his investigations:

1. The severe storms of the Atlantic coast often originate in the tropical latitudes, where they are distinguished by the name of *hurricanes*.

2. These storms cover, at the same moment of time, a surface whose diameter varies from one to five hundred miles, and in some cases they have been much more extensive. They act with diminished violence towards the exterior, and with increased energy towards the interior.

3. While south of the parallel of 30° these storms pursue their course towards the west, on a track which inclines gradually to the northward. In the vicinity of latitude 30° their course changes somewhat abruptly to the northward and eastward, and the track continues to incline gradually to the east, towards which point, after leaving the lower latitudes, they advance with an accelerated velocity. The rate of progress may be estimated at from 12 to 30 miles an hour.

4. The duration of the storm at any place within its track depends upon its extent, and the rate of velocity with which it moves.

5. The direction of the wind over the greater portion of the track is not the direction of the progress of the storm.

6. In the lower latitudes, while drifting to the westward, the direction of the wind at the commencement of these storms is from a northern quarter, usually from northeast to northwest, and during the latter part of the gale, it blows from a southern quarter of the horizon.

7. North of the parallel of 30° , and while pursuing their course to the northward and eastward, these storms commence with the wind from an eastern or southern quarter, and terminate with the wind from a western quarter.

8. On the outer portion of the track, they exhibit at their commencement a southerly wind, which, as the storm comes over, veers gradually to the westward, in which quarter it terminates.

9. Along the central portion of the track, the first force of the wind is from the southeast; but after blowing for a certain period, it changes suddenly to an opposite point, from which quarter it blows with equal violence, till the storm has passed over: it is under this portion of the storm that we notice the greatest fall of the barometer, and the mercury usually begins to rise a short time previous to the change of wind.

10. On the inner portion of the track the wind commences from a more eastern or northeastern point of the horizon, and afterwards veers by north to a northwest or westerly quarter, where it finally terminates.

11. Hence Mr. Redfield infers that the portion of the atmosphere which composes the body of the storm blows in a horizontal circuit around a vertical axis of rotation, which is carried onward with the storm, and that the direction of the circuit is from right to left.

12. The barometer always sinks while under the first portion of the storm, and rises again under the last portion of the gale.

In 1835 Mr. Redfield published an analysis of several additional storms which visited the American coast, and accompanied his paper with a chart,

upon which eleven of these tracks were carefully represented. In subsequent years Mr. Redfield continued his investigations, and in 1846 he published an analysis of three additional hurricanes, making sixteen storms whose tracks are delineated upon his chart of the Atlantic coast. The results of all these investigations served to confirm substantially the conclusions published in 1833.

In the Journal of the Franklin Institute for April, 1836, Mr. Espy commenced the publication of a series of essays, in which he announced a new theory of storms; and he has since continued his researches up to the present time. The following generalizations, given in his own words, are the latest at which he has arrived:

1st. The rain and snow storms, and even the moderate rains and snows, travel from the west towards the east, in the United States, during the months of January, February, and March, which are the only months yet investigated.

2d. There is a depression of the barometer near the central line of the storm.

3d. The central line of minimum pressure is generally of great length from north to south, and moves sideforemost towards the east.

4th. This line is sometimes nearly straight, but generally curved, and most frequently with the convex side towards the east.

5th. The velocity of this line is such, that it travels from the Mississippi to the Connecticut river in about twenty-four hours; and from the Connecticut to St. John, Newfoundland, in nearly the same time, or about thirty-six miles an hour.

6th. When the barometer falls suddenly in the western part of New England, it rises at the same time in the valley of the Mississippi, and also at St. John, Newfoundland.

7th. In great storms, the wind, for several hundred miles on both sides of the line of minimum pressure, blows towards that line directly or obliquely.

8th. The force of the wind is in proportion to the suddenness and amount of the barometric depression.

9th. In all great and sudden depressions of the barometer, there is much rain or snow; and in all sudden great rains or snows, there is a great fluctuation of the barometer.

10th. Many storms are of great and unknown length from north to south, reaching beyond our observers in the gulf of Mexico, on the one hand, and beyond the northern lakes on the other, while their east and west diameter is comparatively small. The storms, therefore, move sideforemost.

11th. Most storms commence in the "far west," beyond the stations of our most western observers; but some commence in the United States.

12th. When a storm commences in the United States, the line of minimum pressure does not come from the "far west," but commences with the storm, and travels with it towards the east.

13th. There is generally a lull of wind at the line of minimum pressure, and sometimes a calm.

14th. When the wind changes to the west, the barometer begins to rise.

15th. There is generally but little wind near the line of maximum pressure, and on each side of that line the winds are irregular, but tend outwards from that line.

16th. The fluctuations of the barometer are generally greater in the northern than in the southern parts of the United States.

17th. The fluctuations of the barometer are generally greater in the eastern than in the western parts of the United States.

18th. In the northern parts of the United States, the wind, in great storms, generally sets in from the north of east, and terminates from the north of west.

19th. In the southern parts of the United States the wind generally sets in from the south of east, and terminates from the south of west.

20th. During the passage of storms the wind generally changes from the eastward to the westward by the south, especially in the southern parts of the United States.

The importance of verifying, modifying, or refuting these generalizations, will appear more fully by a consideration of the following theory, which first led to the adoption of the plan of laying down the phenomena of storms on maps, as here recommended to you:

1st. When the air near the surface of the earth in a particular locality acquires a higher temperature or a higher dew-point than that of surrounding regions, it will ascend, on account of a less specific gravity—perpendicularly if there is a calm.

2d. As it ascends it comes under less pressure and expands, and becomes colder by expansion, about one degree and a quarter for each hundred yards.

3d. The dew-point falls about one-quarter of a degree, by the expansion of the vapor, for each hundred yards; and, therefore, when the ascending air rises as many hundred yards as the dew-point is below the temperature of the air at the surface of the earth in degrees of Fahrenheit, the cold of expansion of the air will begin to condense the vapor contained in it, and thus form cloud.

4th. As soon as the vapor begins to condense into cloud, the latent caloric will begin to be evolved, which will diminish the cooling effect of its expansion in its further ascent, sometimes a little more and sometimes a little less than one-half, according as the dew-point is above or below 70° of Fahrenheit.

5th. When the air has ascended high enough to have condensed by the cold of expansion, from diminished pressure, one-hundredth of its weight of vapor, its temperature will be about 48° warmer from the evolution of the latent caloric than it would be by going up to the same height without vapor in it, and will then be about 48° warmer than the air around the cloud at the same elevation, and of course about one-tenth lighter.

6th. The air in the cloud being thus specifically much lighter than the surrounding air, will ascend, and, in ascending, spread out in all directions above, overlapping the air of surrounding regions, and thus causing the barometer to rise all round the cloud to a distance proportional to the magnitude of the cloud.

7th. Whilst the barometer is rising all round the cloud from the increasing weight of the air, it will fall under the central regions of the cloud in proportion to the quantity of air spreading out above.

8th. The air near the surface of the earth will now rush in on all sides from the regions around the cloud, where the barometer stands high, towards the central regions, where the barometer stands low, with a velocity proportional to the square root of the difference of pressure.

9th. The air thus rushing in under the cloud on all sides will ascend, and carry up its vapor with it, and will condense it into cloud by the cold of expansion from diminished pressure, as before, and thus the process of cloud-forming will be continued.

10th. As the principal part of this upmoving current of air is in the upper regions of the atmosphere, which move all the year, over the United States, from west to east, the cloud, with its whole column of light air, must also move in the same direction.

“Dr. Hare has turned his attention to the electrical phenomena which accompanies the more violent exhibitions of the storm when it assumes the form of a tornado. He agrees with Mr. Espy in opinion as to inward and upward direction of the wind towards the middle of the storm, but differs from him with respect to the cause of the current. He proposes a definite theory of the phenomena of the tornado, founded on well known laws of electrical action, combined with facts of observation. It has been fully established by experiment in different parts of the earth that there is an accumulation of positive electricity in the upper regions of the atmosphere, that the surface of the earth relative to the lower stratum of air is slightly negative, and that space void of air may be considered an electrical conductor. From these facts Dr. Hare infers that the surface of the earth, the surrounding atmosphere, and the space immediately around and exterior to the atmosphere, form three concentric spheres, of which the outer and inner are constantly charged with opposite electricity. The arrangement is, therefore, precisely that of a charged leyden jar, of which the exterior sphere is analogous to the outer coating, the surface of the earth to the inner, and the intervening atmosphere to the non-conducting glass. The clouds are insulated conductors floating between the two coatings, and therefore liable to be variously charged by induction as their position relative to each other and the two coatings is varied. In some cases the arrangement may be such as to form a series of steps of intermediate conductors, each electrified by induction, so as to produce a violent ascending current or *convective* discharge from the surface of the earth upwards.

“The theories of Redfield, Espy, and Hare may not be found incompatible in all points; and whatever may be the future state of our knowledge relative to them, they point to definite objects of inquiry, which cannot fail to reward proper observation with a rich harvest of important results.”

The idea occurred to me that more might be learned from a complete analysis of a single storm, than from a partial analysis of several storms; and that any storm of strongly marked characteristics, if fully investigated, must prove a complete *experimentum crucis*, at least between the theories of Messrs. Redfield and Espy. I accordingly selected the storm of December 20, 1836, for a thorough examination. I obtained barometric observations from 27 different stations within the United States and the neighboring British possessions. I also obtained meteorological journals, not containing barometric observations, from 28 military posts, from 42 academies in the State of New York, and from five other stations; making 102 in all, besides several stations beyond the probable limits of the storm.

In analyzing these materials, the barometric observations were all graphically represented by curves, showing the fall and rise of the barometer, with the time of its minimum height. Then joining by a line all those places where the minimum of the barometer occurred at the same instant,

we are furnished with the means of measuring the rate of progress of the great atmospheric wave. On the southern border of the United States, this velocity varied from 17 to 29 statute miles per hour; and on the northern border from 17 to 37 miles. The leading characteristics of this storm were as follows: After a clear and cold interval, with barometer high, the wind commenced blowing from the south. The barometer fell rapidly; the thermometer rose; rain descended in abundance. The wind veered suddenly to northwest, and blew with great violence. The rain was succeeded by hail or snow, which continues but a short time. The barometer rises rapidly; the thermometer sinks as rapidly. These changes are experienced progressively from west to east.

This storm was not circular. The area of rain and snow was about 500 miles broad from east to west. Its length from north to south was known to be 800 miles, and probably was not less than 1,500. For nearly a day before the crisis, the wind blew from the southern quarter, and generally for several hours from the southeast. After the minimum of the barometer, the wind blew with great violence from nearly the opposite point; commonly the northwest. Here was clearly indicated a prevalent tendency of the wind towards a central line; but, unfortunately, the observations embraced only one-half the area of the storm. The oscillation of the barometer showed a steady increase from latitude 25° to Quebec. The centre of the storm, therefore, could not have been south of Quebec, and north of this place we could obtain no observations.

I was now desirous of investigating a storm of marked characteristics which could be *entirely surrounded*, so that more of its features would need to be supplied by conjecture. Two storms which occurred in February, 1812, appeared tolerably well suited to my purpose, and were selected for a new investigation. Great pains were taken to collect materials from every part of the United States. I succeeded in obtaining barometric observations from 64 different stations. I also procured registers, without barometric observations, from 41 military posts, and 22 other stations, making 127 in all, not including registers from several stations too remote to be of any service in the proposed investigation.

I commenced the analysis of the storm of February 1-5, by following the same course I had pursued with the storm of 1836, viz: representing the barometric observations by curves which should exhibit the fall and rise of the mercury, with the time of minimum height; and from the time of minima I proposed to deduce the progress of the storm. But I was disappointed in my expectations. I did not obtain such a uniform rate of progress as I had anticipated. After some time I perceived that my observations embraced two centres of disturbance; that I had got at least two storms in close juxtaposition, and interfering with each other. I then discovered that my lines of barometric minimum represented relations which were *extremely complex*, and were not well adapted to my purpose, which was the development of physical causes. I therefore sought for some mode of graphically representing the observations which should be founded upon *simple relations*, and be better adapted to suggest the causes of the phenomena. I at last settled upon a method which appears to me well suited to this purpose, and substituted for lines of *minimum pressure*, lines of *equal pressure*. Having determined, as well as I was able, the mean height of the barometer at each station, I compared each observation with the mean. I then drew a line upon a map of the United States, passing through all

those places where the barometer stood at its mean height. This line may be called the line of mean pressure. I then drew a line through all the places where the barometer stood 2 inches above the mean, and another for 4 inches above the mean. So, also, I drew a line through all the places where the barometer stood 2 inches below the mean; another for 4 inches below; and others for 6 inches, 8 inches, and 100 inches below the mean height. These lines must, from the nature of the case, be continuous curves; and the centre of these curves must be a point of maximum or minimum pressure. Near the middle of a great storm we find a point of minimum pressure—that is, *the centre of a vortex*; and the lines of equal pressure will indicate at a glance whatever connexion there may be between the weight of the air and the direction of the wind.

Upon a similar principle, all the observations of the thermometer were graphically represented upon the same chart. A line joining all those places where the thermometer stands at its mean height for the given hour and month is marked zero, and may be called the line of mean temperature. Another line joins all those places where the thermometer is 10° above the mean, and others for 20° and 30° above the mean. So, also, lines are drawn for 10° and 20° below the mean temperature. There are also continuous lines surrounding a point of maximum or minimum thermometric disturbance; not points of maximum or minimum temperature absolutely, for we only regard the deviation from the mean temperature of the place for the given hour and month. These barometric and thermometric curves exhibit some conformity to each other, but are far from being identical. The direction of the wind is represented by arrows, and its force is indicated, so far as convenient, by their length.*

Other phenomena are now indicated by *colors*. Those regions where the sky was unclouded, or where the cloudiness was less than one-half, are colored blue; those where the sky was entirely overcast, or the cloudiness exceeded one-half, but without rain or snow, are colored brown. Those regions upon which snow is falling, are colored green; and those where rain is falling, are colored yellow. Thus, nearly every important circumstance of a storm is presented to the eye at a single glance. All these particulars will be understood from the two accompanying charts, illustrating the progress of the storm of February 16, 1812.

In both the storms of February, 1812, after they had acquired considerable violence, there was a prevalent motion of the winds inward, with a tendency to circulate around the centre, in a direction contrary to the sun's motion. The motion of the wind, therefore, was neither wholly centripetal nor wholly rotary, but a combination of the two. As long as the wind was moderate, neither of these tendencies was clearly marked, and there were numerous perplexing anomalies, probably occasioned in many instances by the inequalities of the earth's surface. The storm of February 16 travelled in one day 560 miles in a direction N. 53° E., making its velocity 23 miles per hour. The storm of February 1–5 remained for two days nearly stationary, and then travelled N. 62° E. at the rate of 36 miles per hour. On the whole, then, we may conclude that when storms are violent, and there is a great depression of the barometer, the direction of the wind presents considerable regularity, being spirally inward towards

*For an account of the method employed by Mr. Espy in representing the phases of storms, see his communication, appendix No. 3.

the centre of the storm; but when the winds are moderate, which is the case of most frequent occurrence, this tendency is very fully developed, and the subject demands more particular investigation.

III. I now proceed to inquire what encouragement there is to a further prosecution of meteorological researches.

In all our investigations respecting natural phenomena we assume that the operations of nature are subject to laws, and that these laws are uniform in their operation. A law of nature knows *no exceptions*. There is no place for science except upon this basis. Are storms subject to laws, and are these laws invariable? Such a question may appear almost like trifling, and yet many argue as if they had but feeble faith in these principles. It is presumed that no philosopher will seriously question them; but it may be said that these laws are so complex that they can never be discovered. What right have we to make such an assumption? Have not the laws of nature been actually discovered in many cases in which they appear equally complex? How long is it since comets were believed to rush through the planetary system in defiance of all law; or if subject to law, then a law of such complexity that all attempt to discover it seemed hopeless? Now, these laws appear so simple that we wonder they were not sooner discovered. All the laws of nature appear complex while they remain unknown; but when once discovered, we are surprised at their simplicity. Why should storms form an exception to this rule? Does the past history of meteorological investigations justify such a conclusion? Have our researches been rewarded with no success? Far otherwise. During the brief period that meteorology has been cultivated we have arrived at many important generalizations, which, if not entitled to the name of laws of nature, afford the strongest assurance that such laws exist, and that we are on the eve of their discovery. We have discovered that the great storms of the United States travel nearly from west to east. No instance has yet been found in which a violent storm in these latitudes has travelled from east to west, although some great rain storms have remained nearly stationary for a day or two. Violent storms usually travel at the rate of about 25 miles per hour, although this velocity has been observed to rise as high as 40 miles. These storms are of various dimensions. While summer showers may cover an area of but a few miles, winter storms sometimes have a diameter of 1,000 miles and upwards. The duration of a storm at any place depends upon its extent, and upon the velocity of its progress. If the diameter of a storm is 500 miles, and its progress 25 miles per hour, its duration at a place situated in the centre of the track will be 20 hours, and less for places out of the centre. Hence we may form some estimate of the superficial extent of a storm from its duration at any place. The direction of the wind is generally inward towards the area of rain, and in violent storms there is a tendency to rotation about a vertical axis. Over a rugged country there are so many obstacles to the wind's progress, that observations at the surface of the earth present a great many anomalies; but at sea there are no such obstacles, and the observations of the wind exhibit a greater uniformity and simplicity. The barometer falls under the first half of the storm, and rises as the storm recedes; the centre of the storm coinciding nearly with the greatest depression of the barometer. The passage of this centre is marked by a sudden change of wind to a point of the compass nearly opposite to that from which it had previously been blowing.

The preceding propositions are deductions from a large number of particular cases which have been investigated. If any one of these propositions requires some modification, the fact will be disclosed by a continuance of the same system of observations. This is a legitimate subject of investigation. Further observations will either prove or disprove these propositions. Some of them may require a little modification, although it is believed they are all substantially true.

We are justified, then, in inferring that storms are subject to laws; that these laws are uniform in their operation, and that they may be discovered. We have already made important progress in this discovery, and we are persuaded that we have only to follow up the same methods of investigation, and our labor will be rewarded with more brilliant discoveries. The results of such knowledge are too important to be overlooked. When we have fully learned the laws of storms, we shall be able to *predict* them. This attainment is of the highest practical importance. If the navigator can anticipate the approach of a storm by 24 hours, this interval will be quite sufficient to place him beyond the reach of its fury; and although the landsman could not remove his habitation from the approaching tornado, he might withdraw his family and the most valuable of his effects to a place of security.

When the magnetic telegraph is extended from New York to New Orleans and St. Louis, it may be made subservient to the protection of our commerce, even in the present imperfect state of our knowledge of storms. The severe winter storms which desolate the Atlantic coast come from the valley of the Mississippi, and require about 24 hours to travel from St. Louis to New York. The approach of a dangerous storm might therefore be telegraphed at New York hours before its arrival, while the sky was yet unclouded and the wind propitious, in season to save a fleet of ships from putting to sea, to be engulfed in the bottomless deep. The science of meteorology is already sufficiently advanced to render important service to commerce, if practical navigators would but heed the indications of the barometer, and make themselves familiar with the principles which observation has established.

It is, then, not without reason that we expect to be able to predict an approaching storm, long enough in advance to render such knowledge of the highest importance; but it may admit of more serious question, whether we shall ever be able to predict the general character of a season with sufficient precision to be of any value to the farmer. But why should we despair of ultimately attaining even this result? If one season is remarkable for its cold, and another for its heat, is there no reason for it? Is there not some cause acting upon a grand scale to bring about this result? Is there no cause which brings an excess of winds from the north, or an excess from the south—which brings an unusual amount of precipitation, or an extraordinary degree of cloudiness? And cannot this cause be discovered? This discovery may require the exercise of patience—it may require a long continued series of observations; but to assume that a principle cannot be discovered, is unphilosophical. This is a legitimate subject of investigation, and it is a field in which the laborer cannot fail of reaping his reward. We only need adequate observations—observations sufficiently precise, and upon a scale of proper extent. We conclude, then, that there is the highest encouragement to the prosecution of meteorological inquiries—that by continuing our researches we may hope to arrive at general

laws, and that a knowledge of these laws cannot fail to contribute to the wealth and happiness of mankind.

I proceed, therefore, to inquire—

IV. Upon what plan the observations should be conducted to secure the object proposed.

Violent winter storms appear most suitable for investigation, because they are of longer duration, and their features are more strongly marked. The oscillation of the barometer affords the surest criterion for identifying a storm in its progress from day to day; and these oscillations are greatest in winter.

1. How large an area should be covered by our observations, to enable us to investigate advantageously the phenomena of our winter storms?

Our observations ought plainly to embrace the entire region of the storm, and even extend somewhat beyond its margin, for in no other way could we be sure that we had found its limits. Now, the great storms which are experienced between the parallels of 40 and 45 degrees are frequently felt as far south as latitude 30°, and sometimes to 25°. South of this line, the oscillations of the barometer, except in a few rare instances, are quite small; and it is probable that the limiting parallel of the trade winds forms a dividing line between the ordinary storms of the torrid and temperate zones. We should therefore extend our system of observations to the southern margin of the United States. The northern limit of our ordinary winter storms remains unknown. In the storm of December 21, 1836, the oscillation of the barometer increased uninterruptedly with the latitude as far as the most northerly station, Quebec. Only the southern half of the storm was included within the United States. This storm was probably experienced as far northward as to the northern shore of Hudson's bay. We should therefore extend our system of observations to the northern margin of the United States; and to render our system complete, requires the co-operation of the British government to extend the observations to the entire region of Hudson's bay.

If we merely wished to embrace in our observations the area of a storm for a single hour, then the interval between the Mississippi and the Atlantic would ordinarily be sufficient. But we could not thus expect to discover the origin of a storm. We must trace it in its progress from its commencement to its greatest violence, and thence to its decline. By observing *under what circumstances* it takes its rise, we may hope to be able to discover the *cause* of its activity. We should therefore aim to trace every storm from its origin to its close. At the ordinary rate of progress a great storm would travel from the Rocky mountains to the Atlantic in two days. What influence this range of mountains may have upon our storms is unknown, except from conjecture. We cannot suppose that a storm could travel from the Pacific to the Atlantic without experiencing some modification in passing over a range of mountains rising into the region of perpetual snow. What this modification is, can be determined by corresponding observations on both sides of the mountain. I therefore conclude that it is important to embrace in our system of observations the entire continent from the Pacific to the Atlantic, and from the gulf of Mexico to the northern shore of Hudson's bay.

2. At what distance from each other should stations of observation be selected?

If we were investigating the phenomena of a summer shower, it would

be indispensable to have stations at very short distances from each other; but in winter storms this is less important. I consider it, however, desirable to have stations at intervals of fifty miles from each other, and such might probably be obtained in the more thickly settled parts of the United States. In other parts of the country this would be impracticable; but I would strive to obtain at least one station for every hundred miles square. At this rate we should need about three hundred observers for the United States. It is not doubted that this number might be obtained; indeed, we have well nigh this number already, but, unfortunately, they are very unequally scattered over the country.

3. What materials have we to depend upon, and what is wanting to complete the plan of one observer to every hundred miles square?

We have the government observations at the military posts, now 57 in number. We have observations from 41 academies in the State of New York, and 25 stations in Pennsylvania. Then we have barometric observations from about 40 other individuals scattered promiscuously over the country; and thermometric observations from about 20 others. There is, besides, a large number of those who have meteorological instruments, which they occasionally consult, but do not feel sufficient interest in the subject to keep a systematic journal. If a grand meteorological effort were made, with a prospect of yielding important results, probably most of those persons might be pressed temporarily into the service. New England is pretty well manned with observers, except in the northern part, where three or four more are greatly needed. Probably, if instruments could be furnished without expense, volunteers might be found to make the observations. New York and Pennsylvania are fully organized; but throughout the remainder of the United States the stations are few and scattered. Excluding Oregon and the Indian territory, the remaining States embrace about a million and a half square miles, and at our lowest estimate would require about 150 observers. We have 50 observers already in the field, leaving 100 to be provided for. How is this deficiency to be supplied? If our government would direct meteorological observations to be made at the principal light-houses along our coast and the chain of the great lakes, it would leave only the interior of the country to be provided for; and if instruments could be furnished without expense, volunteers might probably be found to take the observations at most of the remaining stations.

To extend this system of observations further westward must be attended with serious difficulties. We already have registers kept at most of the military posts in the Indian country; and as new posts are established, it is presumed that the government will direct them to be improved for observations. We may thus hope ere long to obtain a line of stations reaching to the mouth of the Columbia river; and as settlements extend, observations will multiply on the other side of the Rocky mountains. On the whole, then, it is believed we might occupy the whole United States from its northern to its southern border, and from the Atlantic to the Indian territory, beyond the Mississippi, with an army of meteorologists sufficiently numerous to enable us to investigate advantageously the phenomena of our great storms, provided instruments could be furnished gratuitously for about 100 stations; and, moreover, we might probably have a line of observers at unequal intervals, reaching even to the Pacific ocean. The expense of 100 sets of meteorological instruments may be estimated at \$3,000.

It is believed that the Smithsonian Institution might undertake to furnish

these instruments and organize a grand system of meteorological observations upon this continent, in perfect harmony with the views of James Smithson. Mr. Smithson bequeathed his property, in trust, to this country, *for the increase and diffusion of knowledge among men*. It is believed that by carrying out the plan now suggested, knowledge would be increased and diffused, and it would be that kind of knowledge which would contribute to the comfort and happiness of society, as much as perhaps any other which can be named.

4. Specific plan of operations proposed.

The following is proposed for the consideration of the Regents of the Smithsonian Institution, as the outline of a grand meteorological campaign.

Let a meteorological department of the institution be organized, under the direction of the Secretary, with a suitable assistant. Let a united effort be made to secure for a limited period, and to the greatest possible extent, the co-operation of the general government, the several State governments, scientific societies, and the friends of science throughout the country. Let the general government be requested to give the greatest possible extension to their system of observations at the military posts, and to authorize similar observations to be made at certain light-houses, so far as may be necessary to complete a line of stations at intervals of 100 miles along the whole extent of our coast, and the chain of the northern lakes. Let the regents of the University of the State of New York be requested to reorganize the system of observations in that State, by furnishing barometers to about 20 of their academies, and directing the observations to be reported regularly to Washington. Let the committee having charge of the observations in Pennsylvania be requested to adopt the same plan of observations which shall be agreed upon for the other States, and report regularly to Washington. Let application be made to the legislatures of each of the other States, inviting them to co-operate in this noble scheme, by emulating the examples of New York and Pennsylvania. Let the scientific societies throughout the United States be appealed to, to assist in organizing an efficient corps of observers, each in its appropriate sphere; and let individual observers throughout the country be requested to unite their efforts in one uniform and systematic plan of operations. Let them be requested to report their equipment of instruments, and state whether they will undertake to provide whatever may be wanting, at their own expense. Let then the entire country be divided into sections not exceeding 100 miles square; and in each section not already provided for, let an observer be sought out, who shall volunteer to make the observations if instruments are furnished him. Let then the Smithsonian Institution assume the burden of furnishing the necessary instruments to those who are unable to do it themselves. It is estimated that the sum required for this purpose would not exceed three thousand dollars. Let a form of observations be provided, and instructions to all the observers, who shall report at least quarterly to the Secretary at Washington. Let it be the duty of the meteorologist to take charge of the observations, to discuss and analyze them, and endeavor to deduce from them the laws of storms. Let these investigations be published, in as much detail as may be thought demanded by the claims of science, and let a copy of whatever may be published be forwarded to each observer, in order that he may be stimulated in his work by finding that his labor is not wholly in vain.

Finally, to give to this system its greatest efficiency, the co operation of the British government and of the Hudson's Bay Company is absolutely indispensable. The greater part of our severe storms extend far beyond the limits of the United States on the north. Observations confined to the United States will therefore seldom give us the entire area of a storm, and frequently only half of it. The remaining half must then be supplied by conjecture. This would leave all our investigations in an unfinished and unsatisfactory state. We want a line of stations through Canada, along the shores of Hudson's bay, to the farthest outpost of civilization. At every government station a meteorological journal might doubtless be kept; and it is confidently believed that if the Smithsonian Institution would embark in earnest in a grand meteorological crusade, the British government would cheerfully contribute its efficient co operation.

A system of observations like that here contemplated, if faithfully prosecuted for one year, would well nigh exhaust the subject. The storms of each year are probably but a repetition of those of the preceding. Nevertheless, it would be unsafe to calculate upon concluding the war after a single year's campaign. Experience in similar cases has shown that it requires considerable time to organize so large a plan of operations, and the system would not, probably, attain its greatest efficiency the first year. It would be unwise, therefore, to calculate upon a less period of operations than three years. But it is believed that in this period, results would be developed which would more than repay all the expense of time and money incurred; while, upon the existing scale of operations, the progress of discovery must be slow and uncertain. In order to enable us to investigate advantageously the phenomena of a single storm, we must have simultaneous observations from a vast number of stations. Observations from a few stations, though continued to the end of time, will not accomplish the same object. How, then, can the Regents of the Smithsonian Institution more faithfully carry out the views of its benevolent founder, than by vigorously prosecuting these researches to their completion? How can they contribute more directly and powerfully to the prosperity of our commerce; and, through commerce, add to the wealth and happiness of the whole country?

I remain, very respectfully, your obedient servant,

ELIAS LOOMIS.

JOSEPH HENRY, LL. D.,

Secretary Smithsonian Institution.

APPENDIX No. 3.

Extract from a communication from Professor Espy on the subject of Meteorology.

MY DEAR SIR: I am much pleased to learn from your letter that the Regents of the Smithsonian Institution would probably make an appropriation for the purpose of establishing a series of observations "to solve, if possible, the problem of American storms." I am of opinion that no subject of science is more worthy of the attention of the institution; and in answer to your request that I should furnish you with suggestions on the subject, I refer you, in the first place, to my work entitled "Philosophy of Storms," from page 77 to page 172, for a full development of the plan

adopted twelve years ago of investigating the phases of storms, by the joint committee of the American Philosophical Society and the Franklin Institute, of the State of Pennsylvania.

The plan then suggested, and in part carried out, was adopted in the investigation of the phases of storms during the five years in which I was in the service of the government. In my "circular to the friends of science," in which I invited all persons in the United States keeping journals of the weather to send them to the office of the Surgeon General, Washington, I announced my intention to lay down on skeleton maps of the United States, by appropriate symbols, all the most important phases of great storms which might come within the range of our simultaneous observations; and thus it was hoped we should be able to determine the *shape* and *size* of all storms; whether they are *round* or *oblong*; and if oblong, whether they move *sideforemost* or *endforemost*, or *obliquely*; and to ascertain their *velocity* and *direction* in all the different seasons of the year; the *course* of the wind in and beyond the borders of the storm; the *fluctuation* of the barometer and *change* of temperature which generally accompany storms, and the *extent* to which their influence is felt beyond their borders.

Having obtained observations from a wide extended correspondence, I laid down the phases of the storms on maps, as presented in my first report, and I have continued the same plan in my second report, now ready to be printed. In the investigation of the materials of the second report, comprising the observations of three years and three-quarters, I have discovered no facts contradictory to the generalizations deduced from the winter storms of three months embraced in the second report. I consider it of the highest interest, by an extended series of observations, which I hope the Smithsonian Institution will cause to be made over a much wider territory than my observation embraced, to verify, or, if necessary, modify these generalizations, and also to investigate the laws of summer storms, which I fear cannot be done without much more numerous observers than I was able to procure.*

* * * * *

The elements of the theory I have given you are the same as those presented in my work on storms; and though I have demonstrated them approximately, and have no doubt of their general accuracy, yet I am convinced that nothing will establish the truth on this subject in such a manner as to carry conviction to every mind but a series of wide extended simultaneous observations, continued for a long time, by numerous observers. Such a series I hope is now about to be made.

It would be inappropriate to extend this communication to a greater length; but I will explain to you at another time some experiments connected with meteorology, which I wish to see performed, on the electricity of steam, and on the specific caloric of atmospheric air and other gases, with the aid of my nephelescope, and on the law of cooling of air in great expansions of air by diminished pressure.

I remain, very respectfully, yours, &c.,

JAMES P. ESPY.

Prof. J. HENRY,
Secretary Smithsonian Institution.

* The generalizations and theory of Mr. Esby are given in the preceding report of Professor Loomis, page 197.

THIRD ANNUAL REPORT

OF THE

BOARD OF REGENTS

OF

THE SMITHSONIAN INSTITUTION,

TO

THE SENATE AND HOUSE OF REPRESENTATIVES,

SHOWING

THE OPERATIONS, EXPENDITURES, AND CONDITION OF THE INSTITUTION

DURING THE YEAR 1848.

FEBRUARY 19, 1849.

Laid upon the table, and ordered to be printed.

WASHINGTON:
TIPPIN & STREEPER, PRINTERS;

1849.

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OFFICERS AND MEMBERS OF THE SMITHSONIAN INSTITUTION:

THE PRESIDENT OF THE UNITED STATES,
Ex-officio Presiding Officer of the Institution.
 THE VICE PRESIDENT OF THE UNITED STATES,
Ex-officio Second Presiding Officer.
 GEORGE M. DALLAS,
Chancellor of the Institution.
 JOSEPH HENRY,
Secretary of the Institution.
 CHARLES C. JEWETT,
Assistant Secretary, acting as Librarian.
 WILLIAM W. SEATON,
 ALEXANDER D. BACHE,
 JAMES A. PEARCE, } *Executive Committee.*

REGENTS:

GEORGE M. DALLAS, *Vice President of the United States.*
 ROGER B. TANEY, *Chief Justice of the United States.*
 WILLIAM W. SEATON, *Mayor of the city of Washington.*
 JAMES A. PEARCE, *Member of the Senate of the United States.*
 JAMES M. MASON,* *Member of the Senate of the United States.*
 JEFFERSON DAVIS, *Member of the Senate of the United States.*
 HENRY W. HILLIARD, *Member of the House of Representatives.*
 GEORGE P. MARSH, *Member of the House of Representatives.*
 ROBERT McCLELLAND, *Member of the House of Representatives.*
 RUFUS CHOATE, *Citizen of Massachusetts.*
 GIDEON HAWLEY, *Citizen of New York.*
 WM. C. PRESTON, *Citizen of South Carolina.*
 RICHARD RUSH, *Citizen of Pennsylvania.*
 ALEXANDER D. BACHE, *Member of National Institute, Washington.*
 JOSEPH G. TOTTEN, *Member of National Institute, Washington.*

MEMBERS EX-OFFICIO OF THE INSTITUTION:

JAMES K. POLK, *President of the United States.*
 GEORGE M. DALLAS, *Vice President of the United States.*
 JAMES BUCHANAN, *Secretary of State of the United States.*
 ROBERT J. WALKER, *Secretary of the Treasury of the United States.*
 WILLIAM L. MARCY, *Secretary of War of the United States.*
 JOHN Y. MASON, *Secretary of the Navy of the United States.*
 CAVE JOHNSON, *Postmaster General of the United States.*
 ISAAC TOUCEY, *Attorney General of the United States.*
 ROGER B. TANEY, *Chief Justice of the United States.*
 EDMUND BURKE, *Commissioner of Patents of the United States.*
 WILLIAM W. SEATON, *Mayor of the city of Washington.*

HONORARY MEMBERS OF THE INSTITUTION.

[No honorary members have yet been elected.]

* Appointed in place of Mr. Breese, resigned.

THIRD ANNUAL REPORT
OF
THE BOARD OF REGENTS
OF
THE SMITHSONIAN INSTITUTION,
SHOWING

The operations, expenditures, and condition of the Institution up to January 1st, 1849.

To the Senate and House of Representatives :

In obedience to the act of Congress establishing the Smithsonian Institution for the increase and diffusion of knowledge among men, the undersigned, in behalf of the Board of Regents of the Smithsonian Institution, submit to Congress, as a report of the operations, expenditures, and condition of the Institution, the following documents, viz:

1. Proceedings of the Board of Regents at their last session.
2. Annual report of the Secretary, giving an account of the operations of the Institution during the past year, accompanied by a report from the Assistant Secretary, relative to the library.
3. Report of the Executive Committee, exhibiting an account of the expenditures of the Institution, and of its financial condition on the 1st of January, 1849.
4. Report of the Building Committee relative to the progress made in the erection of the Smithsonian edifice, and in the improvement of the grounds, with a statement of the expenditures which have thus far been made on the same.

From these documents it will be seen that the Smithsonian Institution has already commenced its operations for the increase and diffusion of knowledge among men; that the plan of organization which has been adopted, and the works which have been completed and begun, have met with the approbation of men of eminence in literature and science both in this country and in Europe; that the Institution has received a valuable donation of chemical and philosophical apparatus from our distinguished countryman, Dr. Robert Hare, of Philadelphia, and that its financial affairs are in a very favorable condition.

From the report of the Building Committee it will be seen that the Smithsonian edifice is as far advanced as the financial arrangements which have been adopted would permit; that the two wings and connecting ranges will be ready for occupation early in the present year, and that the whole will be completed in three years from next March.

The report of the Executive Committee shows, that after all the expenditures for the erection of the building and the improvement of the

grounds, for the purchase of books and apparatus, for publications and researches, and for all other purposes, the value of the funds at the present time exceeds by a small amount that of the original appropriation of the act of Congress of September, 1846, establishing the Institution.

Respectfully submitted.

G. M. DALLAS,
Chancellor of the Smithsonian Institution.
JOSEPH HENRY,
Secretary of the Smithsonian Institution.

JOURNAL OF PROCEEDINGS
OF THE
REGENTS OF THE SMITHSONIAN INSTITUTION,
AT THEIR
THIRD ANNUAL MEETING.

WEDNESDAY, DECEMBER 13, 1848.

This being the day fixed by their resolutions of September 9, 1846, and of December 21, 1847, for their regular annual meeting, the Board of Regents of the Smithsonian Institution convened in the room of the Vice President of the United States, in the Capitol, at 12 o'clock, m.

Present, the Chancellor, Messrs. Bache, Breese, Davis, Hilliard, Marsh, McClelland, Pearce, Seaton, and Totten.

A quorum being present, and the Chancellor being obliged to leave in consequence of his duties in the Senate, Mr. Totten was called to the chair.

The Secretary stated to the meeting that Messrs. Choate and Hawley had been reappointed as regents to fill the vacancies occasioned by the expiration of their first term of service.

The Secretary also stated that he had sent telegraphic messages to Messrs. Choate and Hawley announcing their reappointment, and informing them that the board would probably transact no business for some days in order to give them an opportunity to be present.

Whereupon, on motion,

The board adjourned to meet on Monday, the 18th instant, at 11 o'clock, a. m.

MONDAY, DECEMBER 18, 1848.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Davis, Marsh, McClelland, Pearce, Seaton, and Totten.

Mr. Seaton, from the Executive Committee, presented a report of the expenditures and state of the funds of the institution.

Mr. Totten, from the Building Committee, presented a report on the progress of erection of the Smithsonian edifice and improvements of the grounds, with estimates of future expenses, &c.

The Secretary presented his annual report of the operations of the Institution, accompanied by a report of the Assistant Secretary relative to the library.

On motion, it was

Resolved, That these several reports be recorded on the pages of the journal.

On motion,

The board adjourned to meet on Wednesday, the 20th instant, at 11 o'clock, a. m.

WEDNESDAY, DECEMBER 20, 1848.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Breese, Davis, Marsh, Pearce, Seaton, and Totten.

On motion of Mr. Marsh, it was

Resolved, That the Secretary and Executive Committee be authorized to present to Messrs. Squier and Davis two hundred copies of their memoir contained in the first volume of the Smithsonian Contributions to Knowledge.

Mr. Marsh presented a letter from John R. Bartlett, of New York, accompanying a plan for the preparation of a new and improved dictionary of the English language, under the auspices of the Smithsonian Institution.

On motion, it was

Resolved, That the forementioned letter and plan be referred to the Secretary, the Executive Committee, and Mr. Marsh.

On motion of Mr. Marsh, it was

Resolved, That the Secretary be authorized to purchase, for the sum of one hundred and fifty dollars, the lithographic stones upon which are traced the designs for the first volume of the Smithsonian Contributions to Knowledge.

Mr. Seaton presented letters from several persons making application for employment in the institution.

The Secretary called the attention of the board to the statement made in his report relating to the valuable donation of apparatus, made to the institution by Dr. Robert Hare, of Philadelphia.

Whereupon, on motion of Mr. Seaton, it was unanimously

Resolved, That a committee be appointed, to consist of the Chancellor, Secretary, and Mr. Pearce, to communicate in suitable terms to Dr. Hare, the thanks of the Board of Regents for the munificent present of his extensive and very valuable apparatus to the Smithsonian Institution.

The Secretary stated to the board the progress made in the distribution of the first volume of the Smithsonian Contributions to Knowledge among colleges, learned societies, and large libraries; no copies having as yet been given to individuals.

The Secretary presented a list of donations to the Institution.

The Secretary also presented letters from several distinguished individuals highly approving the plan of the proposed *Bibliographia Americana*, mentioned in his report. (See appendix A.)

On motion, the board adjourned to meet on Wednesday, the 27th instant, at 11 o'clock, a. m.

WEDNESDAY, DECEMBER 27, 1848.

The board met agreeably to adjournment.

Present, Messrs. Bache, Davis, McClelland, Seaton, and Totten.

The Chancellor being absent, Mr. Davis was called to the chair.

The Secretary presented a letter from J. Disturnell, of New York city, accompanying a copy of a memorial to Congress relative to the preparation of a new Gazetteer of North America, which letter and memorial were referred to the Secretary and Executive Committee.

The Secretary also presented a letter from Francis Markoe, esq. of Washington, offering for sale to the Institution the collection of objects of natural history belonging to the estate of the late British minister to the United States, H. S. Fox, esq.; which was referred to the Secretary and Executive Committee, it being understood that the financial arrangements of the board do not for the present allow the purchase of collections in natural history.

The Secretary also presented a letter from Archibald Campbell, esq., Deputy Secretary of the State of New York, accompanying a donation to the Institution, made in accordance with an act of the legislature of that State, of the 14 published volumes in 4to of the Natural History of New York.

On motion, the Chancellor and Secretary were requested to present the thanks of the Board of Regents for this valuable donation.

The Secretary also presented letters from several presidents of colleges; also reports from several learned societies, highly commending the programme of organization of the Institution.

Whereupon, it was

Resolved, That the Secretary be instructed to insert in the records of the Institution the names of all such individuals and societies.

On motion, it was

Resolved, That the Chancellor, Secretary, and Chairman of the Executive Committee be requested to prepare the annual report of the Regents to Congress, giving an account of the operations, expenditures and condition of the Institution.

On motion of Mr. McClelland, it was

Resolved, That the Secretary be requested to return the thanks of the Board of Regents to the Secretary of the Treasury of the United States, to the Secretary of the Navy, and to the Secretary of War for their assistance in promoting the objects of the Institution. Also, to the Hon. Mr. Irwin and Mr. Trist for their donations; and to Mr. Downs, of Philadelphia, for his computations of occultations.

At the request of Mr. Seaton, the Executive Committee were allowed to withdraw their report, in order to enable them to include therein the disbursements and condition of the finances of the Institution up to the end of the year 1848.

At the request of Mr. Totten, permission was given to the Building Committee to withdraw their report for the purpose of making the same more complete.

On motion, it was

Resolved, That the board adjourn, to meet on Wednesday next, at 11 o'clock, a. m.

WEDNESDAY, JANUARY 3, 1849.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Marsh, McClelland, Seaton and Totten; also, by invitation, Dr. Hare, of Philadelphia.

Mr. Seaton presented the revised report of the Executive Committee, which had been withdrawn for the purpose of extending the accounts up to the 1st January, 1849; which was accepted.

The Secretary read a letter from Dr. Hare, relative to the presentation of his apparatus to the Institution; which was ordered to be placed upon the journal. (See appendix B.)

Mr. Bache presented letters from J. Guillemand, esq., of Woodford, England, and from Professor Faraday, of London, concerning James Smithson; which were ordered to be preserved in the archives of the Institution.

Mr. Seaton, from the Building Committee, read a letter from Mr. Owen, late a Regent and Chairman of the Building Committee, relative to the publication of the work entitled "Hints on Public Architecture."

Whereupon, on motion, it was

Resolved, That the Building Committee be authorized, provided the same be required by the publishers, to transfer out of the appropriation originally made for experiments on building materials, a sum not exceeding two hundred dollars, to the appropriations heretofore made, for the publication of a volume on public architecture.

On motion of Mr. Seaton, the following appropriations, recommended by the Executive Committee for the service of the ensuing year, were taken up, considered, and adopted, viz:

For publication of "Contributions to Knowledge" -	\$3,000 00
Scientific researches and computations -	700 00
Meteorological instruments and researches -	1,000 00
Public lectures, &c. -	500 00
Publication of scientific reports -	500 00
Preparation of the general catalogue of American libraries -	1,000 00
Purchase of bibliographical works and books of general reference -	2,000 00
Binding, blank books, stamps, certificates, &c. -	250 00
Purchase of books needed by authors of reports, &c -	400 00
General expenses, including salaries of officers, expenses of the meetings of the board and of committees, clerk hire, postage, &c. -	8,000 00
	<u>17,350 00</u>

On motion, it was

Resolved, That the Chancellor and the Secretary of the Smithsonian Institution be authorized to exchange the treasury notes belonging to the Institution for United States stock; that the certificates for the said stock be taken in the name of the Chancellor and Secretary, and that the stock and its proceeds be at the disposal of the same, under the regulations heretofore existing as to the treasury notes for the purposes of the Institution, in accordance with the several appropriations of the board.

On motion of Mr. Seaton, it was

Resolved, That the Secretary be authorized to appoint some suitable person, at a salary not to exceed four hundred dollars per annum, to act as book-keeper and accountant of the Institution and to perform such other duties as are specified in the report of the Executive Committee.

The Secretary exhibited a copy of the last edition of Dr. Hare's Chemistry, presented to the Institution by the author, containing illustrations of his apparatus now the property of the Institution, and mentioned that among the articles presented by Dr. Hare, were the blocks from which these illustrations were printed.

Whereupon, on motion of Mr. Bache, it was

Resolved, That the Secretary be requested to prepare for the use of the Institution, a descriptive catalogue of Dr. Hare's apparatus, illustrated by impressions from the original blocks.

On motion, the board adjourned to meet on Saturday next, at 10 o'clock, a. m.

SATURDAY, JANUARY 6, 1849.

The board met agreeably to adjournment.

Present, the Chancellor, Messrs. Bache, Davis, Hilliard, McClelland, Marsh, Pearce, Seaton, and Totten.

Mr. Totten presented the revised report of the Building Committee; which was accepted.

Mr. Hilliard read a letter from Mr. Squier, which was referred to the Secretary and Executive Committee.

On motion of Mr. Bache, it was

Resolved, That as the discharge of the duties assigned to the Assistant Secretary, acting as Librarian, are now such as to give entire employment to his time, he receive from the first instant the full compensation provided by the resolution of the board, adopted January 26, 1847.

On motion of Mr. Seaton, it was

Resolved, That when the board adjourn, it adjourn to meet on Wednesday, the 7th of March next, at 10 o'clock, a. m., in the Vice President's room in the Capitol, for the purpose of electing a Chancellor, in the place of Mr. Dallas, whose term of office as Regent expires on the 4th of March next.

The Assistant Secretary, acting as Librarian, read his report relative to the Library.

The board then, on motion, adjourned to meet on Wednesday, the 7th of March next.

SECOND ANNUAL REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION, GIVING AN ACCOUNT OF THE OPERATIONS OF THE YEAR 1848. PRESENTED DECEMBER 13, 1849.

GENTLEMEN: By a resolution of the Board of Regents, at their last annual meeting, I was charged with the execution of the details of the programme, which had been provisionally adopted, and was directed to report annually to the board the progress made in the execution of the duty assigned to me. In accordance with this resolution I present the following statement of the operations of the past year.

The programme of the plan of organization of the institution has been submitted to a number of literary and scientific societies, and in every case has received their unqualified approbation. The principal officers of these societies have expressed a willingness to co-operate with the Smithsonian Institution in carrying out the plans which have been adopted, and it is confidently believed, that as soon as these are fully developed and brought into practical operation, they will meet with general approval.

It was recommended in my last report that the details of the plan should be adopted provisionally, and should be carried into operation gradually

and cautiously, with such changes from time to time, as experience might dictate. The Institution is not one of a day; but is designed to endure as long as our government shall exist, and it is therefore peculiarly important that in the beginning we should proceed carefully and not attempt to produce immediate effects at the expense of permanent usefulness. The process of increasing knowledge is an extremely slow one, and the value of the results of this part of the plan cannot be properly realized until some years have elapsed. Independently of these considerations, the financial arrangements adopted by the Board of Regents, are such as to prevent the full operation of the Institution until after three years from next March; up to that time more than one-half of the income is to be devoted to the erection of the building, and indirectly to the increase of the permanent fund.

It will be recollected that the programme embraces—

1st. The plan of publishing original memoirs on all branches of knowledge, in a series of quarto volumes.

2d. The institution of original researches under the direction of competent persons.

3d. The publication of a series of reports from year to year, giving an account of the progress of the different branches of knowledge.

4th. The formation of a library and a museum of objects of nature and art.

Publication of original memoirs.

The first volume of the Smithsonian Contributions to Knowledge has been published and partially distributed. It consists of a single memoir on the ancient monuments of the Mississippi valley, comprising the results of extensive original surveys and explorations by E. G. Squier, A. M., and E. H. Davis, M. D. It is illustrated by forty eight lithographic plates, and by two hundred and seven wood engravings. The mechanical execution of the volume will bear comparison with that of any publication ever issued from the American press.

In the publication of the first volume of the Contributions, the question occurred as to the propriety of securing the copyright to the Institution. I had not an opportunity of conferring with the Executive Committee on this point, and was therefore obliged to settle it on my own responsibility. I concluded that it would be more in accordance with the spirit of the institution to decide against the copyright. The knowledge which the Smithsonian Institution may be instrumental in presenting to the world should be free to all who are capable of using it. The republication of our papers ought to be considered as an evidence of their importance, and should be encouraged rather than prohibited.

The first memoir occupies an entire volume, and this accidental circumstance has given rise to a misconception of the plan. It has been supposed that each volume of the Smithsonian Contributions is in like manner to consist of a separate treatise on a particular subject selected with a view to popular interest. But such is not the case; each volume will generally contain a number of separate memoirs, on different branches of knowledge, similar to the usual published transactions of learned societies. The only reason why the first volume is occupied with a subject of general interest rather than one on some more abstruse branch of science is, that the

memoir it contains was the *first* which was presented of the character prescribed by the plan. No preference is to be given to any branch of knowledge. The only questions to be asked, in considering the acceptance of a memoir, are, whether it is a positive addition to knowledge, resting on original research, and of sufficient importance to merit a place in the Smithsonian Contributions.

The rules adopted for the acceptance of a memoir are the same as those generally followed by learned societies. The memoir is surrendered by the author to the Institution, and no additions or alterations are allowed to be made after it has been submitted to the commission appointed to examine it, unless by their consent. A certain number of copies is presented to the author for distribution, with the privilege of striking off, at his own expense, additional copies for sale; which in most cases, particularly when the memoir is of popular interest, will be all the remuneration expected by the author.

From what has been said, it will be evident that the papers published in the Contributions cannot generally be of a popular nature. The popular effects to be produced by the Institution are principally those which may be attained by the reports on the progress of the different branches of knowledge, and by the occasional publications in connexion with these of separate treatises on some subject of special interest.

Applications have been made for the first volume of the Contributions from many academies and private institutions, and were our means sufficient, we would be pleased to supply all demands of this kind. But this is obviously impossible, for they alone would exhaust all the income of the Institution.

Preparations have been made for the publication of the second volume of the Contributions, and a sufficient number of memoirs have been already accepted, or are in preparation, to furnish the materials. Five of these are on astronomical subjects, and afford as important additions to this science as have ever been made to it in this country. Two of them relate to investigations on the new planet Neptune, which are only second in value to the original discovery of this distant member of our system. Abstracts of these have been given to the world, and have been received with general approbation. A third is a determination of the zodiac of the asteroids, or the zone in the heavens to which the positions of these small planets are confined. This paper is of much practical importance in facilitating the researches now in progress in different parts of the world relative to the nature of these fragments (as they would seem to be) of a large planet between Jupiter and Mars. It may be at once determined, by an inspection of the table annexed to this paper, whether any star mapped in an old catalogue, and now no longer to be found in the same place, can possibly be one of the asteroids. A fourth paper is an account of a new comet, the discovery of which by an American lady is one of the first additions to science of this kind, so far as I am informed, ever made in this country. The fifth memoir is an account of the Georgetown Observatory, the instruments with which it is furnished, the mode of using them which has been adopted, and the results of the observations which have been made. An important paper is also in process of preparation for the same volume on the gigantic fossil ectacean remains which are found in the southern and western States of the Union.

Other papers are in progress which partake of the character of original researches, since they are in part at least prepared at the expense and un-

der the direction of the Smithsonian Institution. They will be mentioned under the next head.

In a few cases, memoirs have been presented which, though exhibiting research and considerable originality, are not of a character to warrant their adoption as parts of our volumes of Contributions to positive knowledge. The rule given in the programme has been rigidly adhered to, viz: to decline accepting any paper on physical science which consists merely of an unverified hypothesis, however ingenious and plausible such an hypothesis may be. A law of nature is not susceptible of a logical demonstration, like that of a proposition of geometry, but is proved by its fitness to explain old, and to predict new, phenomena. The verification of an hypothesis, as we have stated in the last report, consists in deducing consequences from it, and ascertaining by a direct appeal to observation or experiment, the truth or falsity of these deductions. Any paper, therefore, on material science which does not contain original experiments and observations cannot be admitted as a part of the Contributions to Knowledge. The rule we have adopted is in accordance with the practice of cautious investigators. The law of universal gravitation existed for several years in the mind of Newton as a well conditioned hypothesis, before it was given to the world as a verified and established theory. Besides this, the rules of logic which are employed in discussing the questions of ordinary life are not applicable to the precision of scientific inquiry. The materials in this case, to borrow an expression of an author of celebrity, "must be weighed in the scale of the assayer, and not like the mixed commodities of the market, on the weightbridge of common opinion and general usage."

It has been objected to our publishing original memoirs, that in so doing we are merely performing the duties of a learned society. The answer is, that the learned societies in this country have not the means, except in a very limited degree, of publishing memoirs which require expensive illustrations, much less of assisting to defray the cost of the investigations by which the results have been obtained. The real workingmen in the line of original research hail this part of the plan as a new era in the history of American science. The assistance which the Institution will thus render to original research, will occupy the place of the governmental patronage of other countries, and will enable true genius, wherever found, to place its productions before the world, free of cost, and in a manner most favorable for securing due attention and proper appreciation.

From our experience thus far, I am convinced that circumscribed as is the class of memoirs accepted by the Institution, we shall have no want of materials to fill at least one quarto volume a year. There has been in our country within the last few years a remarkable increase in the attention given to original research, not only in material science, but in every branch of knowledge susceptible of increase. And this is evinced by the character and variety of the papers which have been presented for publication. The wide difference between the increase of knowledge and its diffusion is beginning to be seen and appreciated, and the time is not far distant when we shall be as distinguished for our additions to science as for its diffusion and application. The revolutions of Europe are not only sending to our shores the choicest specimens of art, but also men of reputation and skill in scientific investigation. Besides this, the

present state of France is attended with such an interruption of the ordinary means of scientific publication, that the manuscript volumes on natural history of one of the most distinguished professors of the Jardin des Plantes are offered to us for publication in the Smithsonian Contributions for no remuneration, save a few copies for distribution among friends. Were the Institution fully in operation I should not hesitate, in accordance with the liberality which should characterise an establishment founded on the bequest of a foreigner, to recommend the adoption of these memoirs for publication at the expense of the institution, and perhaps we might now distribute them through several of our volumes and finish the publication of them in the course of a few years.

Original researches.

The second part of the plan consists in instituting original researches, the results of which are to be published, with the other memoirs, in the volumes of the Smithsonian Contributions. Under this head may be first mentioned the publication of the tables ordered at the last meeting of the board, for facilitating the calculation of the time of appearance of occultations of the fixed stars by the moon. The object of these tables is to assist in the accurate determination of the longitude of important places on the continent of North America, and their importance has been attested by the recommendation of some of the most distinguished astronomers of this country. The accurate establishment of the longitude of any place renders it a landmark to the surveyor, the geographer and the astronomer, and furnishes a most important element in determining its relative position on the map of the country. The observation of occultations affords one of the most ready means of solving this most difficult practical problem. The tables were calculated at the expense and under the direction of the Institution, and were sent to all persons known to be interested in practical astronomy, with a request that the observations which might be made in connexion with them might be sent to the Institution for computation, or published in some accessible journal. These tables have been so well received by astronomers, that with the concurrence of the Executive Committee, I have ventured to order the computation of a set of the same kind on a more extensive scale for the year 1849. Copies of these will be sent to United States officers on the coast of Oregon and California, and will be distributed among all the other observers in this country. They will be found of much practical importance to the corps engaged by the general government in establishing the boundary lines of our new possessions. It is hoped that the remuneration allowed for the labor of computing these tables will not be considered extravagant, when it is mentioned that it has occupied the whole time of Mr. Downes for nearly six months, at the rate of eight hours a day.

With the concurrence of the Executive Committee, I have also published an ephemeris of the planet Neptune, or in other words, a table indicating its position in the heavens during each day of the present year, by which those interested in astronomy are enabled readily to find the place of the new planet in the heavens, or the direction in which the telescope must be pointed in order to observe it. Copies of this have been sent to all the principal astronomers in the world, and it has received the highest commendation. It was calculated by Mr. S. C. Walker from the orbit

deduced by himself, a full account of which forms one of the papers of the second volume of the Contributions. It is the first accurate ephemeris which has ever appeared of this newly discovered member of our solar system.

An appropriation of one thousand dollars was made at the last meeting of the board for the commencement of a series of meteorological observations, particularly with reference to the phenomena of American storms. According to the estimate of Prof. Loomis, appended to my last report, three thousand dollars will be required for the purpose of reducing this part of our plan to practice. It is hoped that one thousand dollars in addition will be appropriated this year, and an equal sum the next, so that, at the end of that time, we shall be prepared for full operation. At the last session of Congress an appropriation was made for meteorology under the direction of the Secretary of the Navy, and in order that the observations thus established may not interfere with those undertaken by the Smithsonian Institution, that officer has directed Prof. Espy to co-operate with the Secretary of the Institution.

It is contemplated to establish three classes of observers among those who are disposed to join in this enterprise. One class, without instruments, to observe the face of the sky as to its clearness, the extent of cloud, the direction and force of wind, the beginning and ending of rain, snow, &c. A second class, furnished with thermometers, who, besides making the observations above mentioned, will record variations of temperature. The third class, furnished with full sets of instruments, to observe all the elements at present deemed important in the science of meteorology. It is believed that much valuable information may be obtained in this way with reference to the extent, duration, and passage of storms over the country, though the observer may be possessed of no other apparatus than a simple wind vane.

With the instruments owned by private individuals, with those at the several military stations, and with the supply of the deficiency by the funds of the Smithsonian Institution, it is believed that observations can be instituted at important points over the whole United States, and that with the observations which we can procure from Mexico and the British possessions of North America, data will be furnished for important additions to our knowledge of meteorological phenomena. As a beginning to this extended system, six sets of instruments have been forwarded to the coast of Oregon and California, for the purpose of establishing periodical observations on the western side of the Rocky mountains. Also, a set has been forwarded to Bent's Fort, and another to Santa Fe. Circulars have been prepared and will shortly be issued for the purpose of ascertaining the number and locality of all those who, with or without instruments, are willing to join in the enterprise. I am indebted to Prof. Coffin, of Lafayette College, for a list of all persons, as far as they are known, who have heretofore been accustomed to make meteorological observations in North America, which will be of much importance in our future investigations relative to this subject.

As a part of the system of meteorology, it is proposed to employ, as far as our funds will permit, the magnetic telegraph in the investigation of atmospherical phenomena. By this means, not only the notice of the approach of a storm may be given to distant observers, but also the attention may be directed to particular phenomena, which can only be properly

studied by the simultaneous observations of persons widely separated from each other. For example, the several phases presented by a thunder-storm, or by the aurora borealis, may be telegraphed to a distance, and the synchronous appearances compared, and recorded in stations far removed from each other. Also, by the same means, a single observatory at which constant observations are made during the whole 24 hours, may give notice to all persons along the telegraphic lines, of the occurrence of interesting meteorological phenomena, and thus simultaneous observations be secured. The advantage to agriculture and commerce to be derived from a knowledge of the approach of a storm by means of the telegraph, has been frequently referred to of late in the public journals. And this, we think, is a subject deserving the attention of the general government.

Under the head of researches, I may mention that several papers are in preparation, under the direction and partly at the expense of the Institution. The first of these relates to a series of valuable observations on the temperature and velocity of the Gulf stream, the author of which the science of our country was called to mourn while he was engaged in an important public service. The observations are now in progress of reduction, and the results will furnish an interesting memoir for the next volume of our Contributions.

The drawings and engravings of a paper on the botany of Oregon are also in progress, and as a small advance has been made to assist in completing these, the memoir will fall under the head of original researches, in part conducted by the Institution.

In the last report, it was mentioned that a magnetic survey of the mineral regions of the northern lakes had been added to the geological and mineralogical survey, the results of which were to be submitted to the Smithsonian Institution. An appropriation was made by the Secretary of the Treasury during the past summer for a continuation of this survey; but on account of the lateness of the season at which the arrangement was made, the person to whom the work was entrusted, was not enabled to engage in it this year. Operations, however, will probably be commenced as soon as practicable, next spring.

There is in the Land Office a large collection of facts relative to the variation of the compass, which have been derived from the observations of the public surveyors, who are directed in all cases to give the variation of the needle, from the true meridian, at the several stations of their surveys. The observations are made with an instrument called the solar compass, which probably gives the variation at each place within a quarter of a degree of the truth. The number of these observations, it is believed, will make up in a considerable degree for their want of greater precision, and from the whole, the lines of declination may be determined with considerable accuracy. The Secretary of the Treasury has liberally directed that all the matter relating to this subject in the land office may be placed at my disposal, and Mr. Wilson has undertaken to present the whole in a series of maps, the publication of which in the Contributions, cannot fail to be received as an interesting addition to terrestrial magnetism.

Among the objects of research enumerated in the programme, is the analysis of soils and plants; but it is the policy of the Smithsonian Institution, in order to employ its funds most effectually in the way of increasing and diffusing knowledge, not to engage in any operation which could be as well if not better carried on under the direction and with the

funds of another institution. In accordance with this, an arrangement has been made with the Commissioner of Patents that the two institutions may not interfere with each other; and as, at the request of Mr. Burke, an appropriation has been made by Congress for a series of experiments on the above-mentioned subjects, the Smithsonian Institution will, therefore, for the present abandon this field of research for others less effectually occupied.

I may also mention in this connexion, that the Smithsonian Institution has been the means of starting an important literary enterprise, intended to facilitate the study of the history and literature of our country. Mr. Henry Stevens, who has been engaged for a number of years as the agent in this country of the British Museum, and other European libraries, has commenced the preparation of a bibliographical work, comprising a description of all books relative to, or published in America prior to the year 1700, and indicating not only the contents and value of the books, but also the principal libraries in this and other countries where they are to be found. The preparation of a work of this kind will be in accordance with that part of our plan which contemplates rendering the Institution a centre of bibliographical knowledge, and will have a direct influence in promoting the objects of the various historical societies which are now established in almost every State of the Union, and in bringing the Institution into friendly relations with them. A certificate has been given to Mr. Stevens to the effect that this work, if found, by a commission to whom it shall be referred, properly executed, will be accepted for publication as part of the Smithsonian Contributions to Knowledge. Assured by this certificate that the work will be properly executed, a number of gentlemen and institutions, whose libraries will be examined and referred to, have liberally subscribed to defray the necessary expense of its preparation. With this encouragement, Mr. Stevens has started for Europe to commence investigations in foreign libraries. To satisfy ourselves as to the importance of a work of this kind, a circular letter was addressed to a number of individuals distinguished for their knowledge of such subjects, and the answer in all cases was highly favorable to the scheme. Some of these answers I have given in the appendix, together with the details of the plan of the work as proposed by Mr. Stevens.—(See appendix A.)

At the last session of Congress an appropriation of \$5,000 was made, on motion of Mr. Stanton, for a series of astronomical observations in the southern hemisphere for the purpose of a new determination of the parallax of the planets, and consequently of their distance from the sun by simultaneous observations on the planets Venus and Mars, made at places situated north and south of the equator. This appropriation has been found inadequate to furnish all the instruments required, and inasmuch as the expedition should not be undertaken unless the observers are provided with all the aids which the latest improvements in modern science can furnish, and since, to wait for an additional appropriation from Congress would cause the delay of a whole year, Lieut. Gilliss has applied to the Institution to purchase and lend to him an achromatic telescope, which, if not paid for by an additional appropriation from the government, will, after its return from the south, form part of the apparatus of the Institution. This instrument will cost about \$2,000, to be paid at the end of three years. The Executive Committee, to whom I applied for counsel on this

subject, agreed with me in opinion, that this was a proper occasion for the application of the funds of the Institution to the promotion of science. The instrument has accordingly been ordered to be constructed by an American artist, and to be accepted only in case its performance shall meet the approval of a commission of practical astronomers appointed to examine it.

The position on the coast of Chili to be occupied by the southern observers, is peculiarly favorable to the study of the facts connected with one of the most mysterious and interesting phenomena of terrestrial physics—namely, the earthquake. Lieut. Gilliss has been requested to give particular attention to this subject, and for the purpose of facilitating his inquiries a pseismometer, or instrument for measuring the intensity and direction of the *earthwave*, has been ordered at the expense of the Institution, to be placed in charge of the expedition during its absence. The cost of this instrument is not yet ascertained; it will, however, not exceed one hundred and fifty dollars.

I think it highly probable that these instruments will be paid for by the general government. The liberal spirit which dictated the original appropriation will, I doubt not, complete the outfit by the addition of a sum sufficient to defray all the necessary expenses.*

Under the head of original researches, I may recall to the Regents the fact of my having been directed to continue my own investigations on physical science, and to report occasionally to the Board my progress therein. In the course of last year, I found an opportunity while at Princeton, to commence a series of investigations on radiant heat, which apparently produced some results of interest, but which my subsequent engagements have prevented me from fully developing. I was also directed to cause to be made a series of experiments on the economical value of building material. It will give me much pleasure to obey this instruction of the Board as soon as a place in the Smithsonian building and the necessary apparatus are procured for properly conducting the research.

Reports on the progress of knowledge.

The Smithsonian Contributions are intended to consist of entirely original additions to the sum of human knowledge, and are to be principally exchanged for the transactions of learned societies, and to be distributed among public institutions. The reports, on the other hand, are to be of a more popular kind, and are intended for as wide a distribution as the funds of the Institution or the means of publishing them may permit. They will give an account of the progress of the different branches of knowledge in every part of the world, and will supply a desideratum in English literature.

The objects of the Smithsonian Institution are not educational. The press in our country already teems with elementary works on the different branches of knowledge, and to expend our funds in adding to these, would be to dissipate them without perceptible effect. Neither do we believe that the distribution of penny magazines, or tracts on the rudiments of science, can ever supersede the labors of the school-master. As a general rule, knowledge presented in a fragmentary form, can only be useful to minds well stored with general principles, to which the isolated facts may

* Since writing this report, the appropriation has been made by Congress.

be referred, and knowledge, both fragmentary and diluted, is almost worthless, even in the way of popular distribution. The elementary principles of science may be systematically taught to a certain extent in common schools, and the reports we intend to publish will be found of value to the teacher, and through him to the pupil, as well as interesting to the general reader. While these reports are rendered as free as possible from technical terms, they will treat of subjects requiring attention and thought to understand them. We think it better that they should be above, rather than below the average intelligence of the country; that they should start from a given epoch, and in most cases should be preceded by a brief exposition of the previous state of each subject.*

Arrangements have been made for commencing some of these preliminary reports, as well as reports on the state of our knowledge of special subjects; among these are—

1. A report on the present state of chemistry as applied to agriculture.
2. A report on the forest trees of North America, giving their economical uses, their mode of propagation, and their history.
3. A report on the present state of our knowledge of lightning, and the best means of guarding against accidents from its effects.
4. A report on the late discoveries in astronomy.
5. A report on meteorological instruments, with practical observations and directions with reference to the use of them.

In connexion with this last report, I may mention that a proposition has been made to the Institution by Prof. Guyot, of the University of Neuchâtel, relative to the importance of commencing at this epoch, and at the beginning of the labors of the Smithsonian Institution, the adoption of the centigrade scale of the thermometer. This is a subject, indeed, worthy of the attention of the Regents. It should, however, be discussed with caution, and be decided only after due deliberation.—(See appendix C.)

The first idea of reports on the progress of knowledge, with which we are acquainted, is due to the Emperor Napoleon, who called upon the French Academy of Science to present him with accounts of the progress of the different branches of knowledge within a given period. Until within the last few years the only regular reports of the kind were those presented to the Swedish Academy. Since that time, however, a series of annual reports on chemistry have been commenced by an association of gentlemen in France, and also a series on the different branches of material science, by the Physical Society of Berlin. The several numbers of the latter are now in progress of translation, in order to furnish in part the materials for the reports, to be prepared for the Smithsonian Institution during the coming year.

Although comparatively little has been done in our country in the way of original research, yet it might be important that the Institution should call for the preparation of a report on the history of the progress of original science in America down to the end of the present half century. This report would exhibit a constant increase in the number and importance of the researches made in our country, and might be found of much service in giving due credit to the labors of those who have been really engaged in the advance of knowledge among us. A report of this kind, however, would require the association of a number of persons combining literary with scientific attainments.

Occasional publication of separate treatises on subjects of general interest.

This part of the plan of organization requires to be carried into operation with much caution. It is liable to much abuse, unless the publication be confined to a narrow class of subjects, viz : to scientific reports on the present state of knowledge of a given subject, to precede the periodical reports, to translations from foreign languages of papers of general interest, and occasionally, perhaps, the exposition of a subject on which, at a particular time, popular knowledge is required. We should be careful not to establish a precedent which may lead us into difficulty, in the way of declining the publication of works which may be presented to us. Scarcely a week passes in which the Institution is not requested to publish some essay or compilation, and the funds which can be devoted to all our publications would not suffice for one-half of those offered of this kind. The only work of this class which has yet been attempted by the Institution, is one entitled "Hints on Public Architecture," under the direction of the Building Committee. Although the Secretary's name was mentioned in the resolution authorizing the publication of this treatise, yet he has thus far had no connexion with it. The publication was authorized before the details of the plan of organization were fully settled. It was at first intended merely as a report of the Building Committee, giving an account of the plans submitted, and the one adopted for the Smithsonian building, together with a report of the investigations of the committee with regard to the materials of construction, &c. It was afterwards changed into the form of a regular treatise in order that it might be referred to a commission of persons chosen to examine it, and that the Institution might thus be relieved from the responsibility of pronouncing upon its fitness for publication. I think it important that besides the preface of this work, a full account of its origin should be given in an introductory advertisement.

Library.

During the past year the library has continued to increase by donations, and by the books which have been deposited by publishers, in accordance with the 10th section of the Act establishing the Institution. The requirements of this Act are, however, not strictly observed by all publishers; and I would direct the attention of the board to a special report of the Assistant Secretary with reference to the point. The whole subject will probably come before Congress during its present session.

Prof. Jewett, the Assistant Secretary, has been industriously engaged during the past year in procuring statistics of the libraries in the United States, and in digesting plans for the details of the library of the institution, and I beg leave to refer you to the able and interesting report of the results of his labors, herewith submitted. A considerable portion of the copies of the Smithsonian Contributions will be presented to public institutions which publish transactions, and which are able to present us in return with additions to our library. The volume now in process of distribution has been preceded by a circular requesting exchanges of the works of all institutions which issue transactions and catalogues of all libraries to which the Contributions may be sent.

Preparation for lecturing.

The plan of organization contemplates a series of free lectures, particularly during the session of Congress. These will be commenced as soon as the building is ready for the purpose. This part of the plan also cannot be put into full operation until after the building is completed. A number of gentlemen have consented to favor us with their services. Men of talents, however, cannot be expected to leave their homes and subject themselves to the expense of visiting Washington, and to the trouble of preparing for a course of lectures without a proper remuneration. It will be necessary, therefore, that an annual appropriation be made for this purpose. The amount, however, must necessarily be small until the building is completed, or until all the interest of the fund can be devoted to the primary objects of the Institution. Besides this, the lecture-room in the east wing, now finished, will scarcely hold more than five hundred persons, while the one in the main building is intended to accommodate twice as many.

Donation.

Dr. Robert Hare, of Philadelphia, having resigned the chair of chemistry in the University of Pennsylvania, which he had filled with honor to himself and his country for nearly thirty years, has presented to the Smithsonian Institution the instruments of research and illustration, collected and used by himself during his long and successful scientific career. Many of these instruments are the invention of the donor, are connected with his reputation, and belong to the history of the science of our day. The gift is important, not only on account of its intrinsic value, but also as establishing a precedent of liberality, which we trust will be frequently observed by others, as well as being an expression of Dr. Hare's approbation of the plan and confidence in the stability of the Institution. A number of other donations have been received, of which a list, with the names of the donors, will be given in the next report.

In view of what has been stated in the foregoing report, the Secretary trusts that the Board of Regents will be satisfied, if ever they had any doubts on the subject, that the plan adopted is one well calculated to carry out the benevolent intentions of the donor, of increasing and diffusing knowledge among men; and that a satisfactory answer has been given to the question frequently asked, namely, when is the Institution to begin? It will be seen that it has commenced the most important part of its operations, and the results are now in progress of dissemination in every part of the civilized world.

For convenience of reference, I have appended for republication the programme and its explanations, given in my last annual report.

Respectfully submitted,

JOSEPH HENRY,
Secretary of the Smithsonian Institution.

Programme of organization of the Smithsonian Institution, presented in the first Annual Report of the Secretary and adopted by the Board of Regents, December 13, 1847.

GENERAL CONSIDERATIONS WHICH SHOULD SERVE AS A GUIDE IN ADOPTING
A PLAN OF ORGANIZATION.

1. WILL OF SMITHSON. The property is bequeathed to the United States of America, "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men."

2. The bequest is for the benefit of mankind. The government of the United States is merely a trustee to carry out the design of the testator.

3. The Institution is not a national establishment, as is frequently supposed, but the establishment of an individual, and is to bear and perpetuate his name.

4. The objects of the Institution are—1st, to increase, and 2d, to diffuse knowledge among men.

5. These two objects should not be confounded with one another. The first is to increase the existing stock of knowledge by the addition of new truths; and the second to disseminate knowledge, thus increased, among men.

6. The will makes no restriction in favor of any particular kind of knowledge; hence all branches are entitled to a share of attention.

7. Knowledge can be increased by different methods of facilitating and promoting the discovery of new truths, and can be most efficiently diffused among men by means of the press.

8. To effect the greatest amount of good, the organization should be such as to enable the Institution to produce results in the way of increasing and diffusing knowledge, which cannot be produced by the existing institutions in our country.

9. The organization should also be such as can be adopted provisionally, can be easily reduced to practice, receive modifications, or be abandoned, in whole or in part, without a sacrifice of the funds.

10. In order to make up for the loss of time occasioned by the delay of eight years in establishing the Institution, a considerable portion of the interest which has accrued should be added to the principal.

11. In proportion to the wide field of knowledge to be cultivated, the funds are small. Economy should therefore be consulted in the construction of the building; and not only should the first cost of the edifice be considered, but also the continual expense of keeping it in repair, and of the support of the establishment necessarily connected with it. There should also be but few individuals permanently supported by the Institution.

12. The plan and dimensions of the building should be determined by the plan of organization, and not the converse.

13. It should be recollected that mankind in general are to be benefited by the bequest, and that, therefore, all unnecessary expenditure on local objects would be a perversion of the trust.

14. Besides the foregoing considerations, deduced immediately from the will of Smithson, regard must be had to certain requirements of the act of Congress establishing the Institution. These are a library, a museum, and a gallery of art, with a building on a liberal scale to contain them.

SECTION I.

Plan of organization of the institution, in accordance with the foregoing deductions from the will of Smithson.

TO INCREASE KNOWLEDGE. It is proposed—

1. To stimulate men of talent to make original researches, by offering suitable rewards for memoirs containing new truths; and,
2. To appropriate annually a portion of the income for particular researches, under the direction of suitable persons.

TO DIFFUSE KNOWLEDGE. It is proposed—

1. To publish a series of periodical reports on the progress of the different branches of knowledge; and,
2. To publish occasionally separate treatises on subjects of general interest.

DETAILS OF THE PLAN TO INCREASE KNOWLEDGE.

I. By stimulating researches.

1. Rewards, consisting of money, medals, &c., offered for original memoirs on all branches of knowledge.
2. The memoirs thus obtained to be published in a series of volumes, in a quarto form, and entitled “*Smithsonian Contributions to Knowledge.*”
3. No memoir, on subjects of physical science, to be accepted for publication, which does not furnish a positive addition to human knowledge resting on original research; and all unverified speculations to be rejected.
4. Each memoir presented to the Institution to be submitted for examination to a commission of persons of reputation for learning in the branch to which the memoir pertains, and to be accepted for publication only in case the report of this commission is favorable.
5. The commission to be chosen by the officers of the Institution, and the name of the author, as far as practicable, concealed, unless a favorable decision be made.
6. The volumes of the memoirs to be exchanged for the transactions of literary and scientific societies, and copies to be given to all the colleges and principal libraries in this country. One part of the remaining copies may be offered for sale, and the other carefully preserved, to form complete sets of the volume, to supply the demand from new institutions.
7. An abstract, or popular account, of the contents of these memoirs to be given to the public through the annual report of the Regents to Congress.

II. By appropriating a portion of the income, annually, to special objects of research, under the direction of suitable persons.

1. The objects, and the amount appropriated, to be recommended by counsellors of the Institution.
2. Appropriations in different years to different objects; so that in course of time, each branch of knowledge may receive a share.
3. The results obtained from these appropriations to be published, with the memoirs before mentioned, in the volumes of the *Smithsonian Contributions to Knowledge.*

4. Examples of objects for which appropriations may be made.

(1.) System of extended meteorological observations, particularly with reference to the phenomena of American storms.

(2.) Explorations in descriptive natural history, and geological, magnetical, and topographical surveys, to collect materials for the formation of a Physical Atlas of the United States.

(3.) Solution of experimental problems, such as a new determination of the weight of the earth, of the velocity of electricity, and of light; chemical analyses of soils and plants; collection and publication of articles of science, accumulated in the offices of government.

(4.) Institution of statistical inquiries with reference to physical, moral, and political subjects.

(5.) Historical researches, and accurate surveys of places celebrated in American history.

(6.) Ethnological researches, particularly with reference to the different races of men in North America; also explorations and accurate surveys of the mounds and other remains of the ancient people of our country.

DETAILS OF THE PLAN FOR DIFFUSING KNOWLEDGE.

1. *By the publication of a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional.*

1. These reports will diffuse a kind of knowledge generally interesting, but which, at present, is inaccessible to the public. Some of the reports may be published annually, others at longer intervals, as the income of the Institution, or the changes in the branches of knowledge may indicate.

2. The reports are to be prepared by collaborators, eminent in the different branches of knowledge.

3. Each collaborator to be furnished with the journals and publications, domestic and foreign, necessary to the compilation of his report, to be paid a certain sum for his labors, and to be named on the title-page of the report.

(4.) The reports to be published in separate parts, so that persons interested in a particular branch can procure the parts relating to it, without purchasing the whole.

(5.) These reports may be presented to Congress, for partial distribution; the remaining copies to be given to literary and scientific institutions, and sold to individuals for a moderate price.

The following are some of the subjects which may be embraced in the reports.

I. PHYSICAL CLASS.

1. Physics, including astronomy, natural philosophy, chemistry, and meteorology.

2. Natural history, including botany, zoology, geology, &c.

3. Agriculture.

4. Application of science to arts.

II. MORAL AND POLITICAL CLASS.

5. Ethnology, including particular history, comparative philology, antiquities, &c.

6. Statistics and political economy.
7. Mental and moral philosophy.
8. A survey of the political events of the world, penal reform, &c.

III. LITERATURE AND THE FINE ARTS.

9. Modern literature.
10. The fine arts, and their application to the useful arts.
11. Bibliography.
12. Obituary notices of distinguished individuals.

II. *By the publication of separate treatises on subjects of general interest.*

1. These treatises may occasionally consist of valuable memoirs, translated from foreign languages, or of articles prepared under the direction of the Institution, or procured by offering premiums for the best exposition of a given subject.

2. The treatises should in all cases be submitted to a commission of competent judges previous to their publication.

3. As examples of these treatises, expositions may be obtained of the present state of the several branches of knowledge mentioned in the table of reports. Also of the following subjects, suggested by the Committee on Organization, viz: the statistics of labor, the productive arts of life, public instruction, &c.

SECTION II.

Plan of organization, in accordance with the terms of the resolutions of the Board of Regents, providing for the two modes of increasing and diffusing knowledge.

1. The act of Congress establishing the Institution contemplated the formation of a library and a museum; and the Board of Regents, including these objects in the plan of organization, resolved to divide the income into two equal parts.

2. One part to be appropriated to increase and diffuse knowledge by means of publications and researches, agreeably to the scheme before given. The other part to be appropriated to the formation of a library and a collection of objects of nature and of art.

3. These two plans are not incompatible with one another.

4. To carry out the plan before described, a library will be required, consisting, 1st, of a complete collection of the transactions and proceedings of all the learned societies in the world; 2d, of the more important current periodical publications, and other works necessary in preparing the periodical reports.

5. The Institution should make special collections, particularly of objects to verify its own publications.

6. Also a collection of instruments of research in all branches of experimental science.

7. With reference to the collection of books, other than those mentioned above, catalogues of all the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not to be found in the United States.

8. Also catalogues of memoirs, and of books in foreign libraries, and other materials, should be collected for rendering the institution a centre of bibliographical knowledge, whence the student may be directed to any work which he may require.

9. It is believed that the collections in natural history will increase by donation, as rapidly as the income of the Institution can make provision for their reception, and therefore it will seldom be necessary to purchase any articles of this kind.

10. Attempts should be made to procure for the gallery of arts casts of the most celebrated articles of ancient and modern sculpture.

11. The arts may be encouraged by providing a room, free of expense, for the exhibition of the objects of the Art Union and other similar societies.

12. A small appropriation should annually be made for models of antiquities, such as those of the remains of ancient temples, &c.

13. For the present, or until the building is fully completed, besides the Secretary, no permanent assistant will be required, except one, to act as librarian.

14. The duty of the Secretary will be the general superintendence, with the advice of the Chancellor and other members of the establishment, of the literary and scientific operations of the institution; to give to the Regents annually an account of all the transactions; of the memoirs which have been received for publication; of the researches which have been made; and to edit, with the assistance of the librarian, the publications of the Institution.

15. The duty of the Assistant Secretary, acting as librarian, will be, for the present, to assist in taking charge of the collections, to select and purchase, under the direction of the Secretary and a committee of the board, books and catalogues, and to procure the information before mentioned; to give information on plans of libraries, and to assist the Secretary in editing the publications of the Institution, and in the other duties of his office.

16. The Secretary and his assistants, during the session of Congress, will be required to illustrate new discoveries in science, and to exhibit new objects of art; also, distinguished individuals should be invited to give lectures on subjects of general interest.

17. When the building is completed, and when, in accordance with the act of Congress, the charge of the National Museum is given to the Smithsonian Institution, other assistants will be required.

Explanations and illustrations of the programme.

The programme embraces the general propositions adopted by the Board of Regents at their last meeting, as the basis of future operations. It is intended to harmonize the two modes of increasing and diffusing knowledge, and to give to the Institution the widest influence compatible with its limited income. That all the propositions will meet with general approval cannot be expected; and that this organization is the best that could be devised is neither asserted nor believed. To produce *a priori* a plan of organization which shall be found to succeed perfectly in practice, and require no amendment, would be difficult under the most favorable circumstances, and becomes almost impossible where conflicting opinions are to be harmonized, and the definite requirements of the act establishing

the Institution are to be observed. It is not intended that the details of the organization, as given in the programme, should be permanently adopted without careful trial; they are rather presented as suggestions to be adopted provisionally, and to be carried into operation gradually and cautiously, with such changes, from time to time, as experience may dictate.

That the Institution is not a national establishment, in the sense in which institutions dependent on the government for support are so, must be evident when it is recollected that the money was not absolutely given to the United States, but intrusted to it for a special object, namely: the establishment of an institution for the benefit of men, to bear the name of the donor, and, consequently, to reflect upon his memory the honor of all the good which may be accomplished by means of the bequest. The operations of the Smithsonian Institution ought, therefore, to be mingled as little as possible with those of the government, and its funds should be applied exclusively and faithfully to the increase and diffusion of knowledge among men.

That the bequest is intended for the benefit of men in general, and that its influence ought not to be restricted to a single district, or even nation, may be inferred not only from the words of the will, but also from the character of Smithson himself; and I beg leave to quote from a scrap of paper in his own hand, the following sentiment bearing on this point: "The man of science has no country; the world is his country—all men, his countrymen." The origin of the funds, the bequest of a foreigner, should also preclude the adoption of a plan which does not, in the words of Mr. Adams, "spread the benefits to be derived from the Institution not only over the whole surface of this Union, but throughout the civilized world." "Mr. Smithson's reason for fixing the seat of his Institution at Washington obviously was, that *there* is the seat of government of the United States, and *there* the Congress by whose legislation, and the Executive through whose agency, the trust committed to the honor, intelligence, and good faith of the nation, is to be fulfilled." The centre of operations being permanently fixed at Washington, the character of this city for literature and science will be the more highly exalted in proportion as the influence of the Institution is more widely diffused.

That the terms *increase* and *diffusion* of knowledge are logically distinct, and should be literally interpreted with reference to the will, must be evident when we reflect that they are used in a definite sense, and not as mere synonymes, by all who are engaged in the pursuits to which Smithson devoted his life. In England there are two classes of institutions, founded on the two ideas conveyed by these terms. The Royal Society, the Astronomical, the Geological, the Statistical, the Antiquarian Societies, all have for their object the increase of knowledge; while the London Institution, the Mechanics' Institution, the Surry Institution, the Society for the Diffusion of Religious Knowledge, the Society for the Diffusion of Useful Knowledge, are all intended to diffuse or disseminate knowledge among men. In our own country, also, the same distinction is observed in the use of the terms by men of science. Our colleges, academies, and common schools, are recognized as institutions partially intended for the diffusion of knowledge, while the express object of some of our scientific societies is the promotion of the discovery of new truths.

The will makes no restriction in favor of any particular kind of knowl-

edge; though propositions have been frequently made for devoting the funds exclusively to the promotion of certain branches of science having more immediate application to the practical arts of life, and the adoption of these propositions has been urged on the ground of the conformity of such objects to the pursuits of Smithson; but an examination of his writings will show that he excluded from his own studies no branch of general knowledge, and that he was fully impressed with the important philosophical fact, that all subjects of human thought relate to one great system of truth. To restrict, therefore, the operations of the institution to a single science or art, would do injustice to the character of the donor, as well as to the cause of general knowledge. If preference is to be given to any branches of research, it should be to the higher, and apparently more abstract; to the discovery of new principles, rather than of isolated facts. And this is true even in a practical point of view. Agriculture would have forever remained an empirical art, had it not been for the light shed upon it by the atomic theory of chemistry; and incomparably more is to be expected as to its future advancement from the perfection of the microscope, than from improvements in the ordinary instruments of husbandry.

The plan of increasing and diffusing knowledge, presented in the first section of the programme, will be found in strict accordance with the several propositions deduced from the will of Smithson, and given in the introduction. It embraces, as a leading feature, the design of interesting the greatest number of individuals in the operations of the Institution, and of spreading its influence as widely as possible. It forms an active organization, exciting all to make original researches who are gifted with the necessary power, and diffusing a kind of knowledge, now only accessible to the few, among all those who are willing to receive it. In this country, though many excel in the application of science to the practical arts of life, few devote themselves to the continued labor and patient thought necessary to the discovery and development of new truths. The principal cause of this want of attention to original research, is the want, not of proper means, but of proper encouragement. The publication of original memoirs and periodical reports, as contemplated by the programme, will act as a powerful stimulus on the latent talent of our country, by placing in bold relief the real laborers in the field of original research, while it will afford the best materials for the use of those engaged in the diffusion of knowledge.

The advantages which will accrue from the plan of publishing the volumes of the Smithsonian Contributions to Knowledge, are various. In the first place, it will serve to render the name of the founder favorably known wherever literature and science are cultivated, and to keep it in continual remembrance with each succeeding volume, as long as knowledge is valued. A single new truth, first given to the world through these volumes, will forever stamp their character as a work of reference. The contributions will thus form the most befitting monument to perpetuate the name of one whose life was devoted to the increase of knowledge, and whose ruling passion, strong in death, prompted the noble bequest intended to facilitate the labors of others in the same pursuit.

Again, the publication of a series of volumes of original memoirs will afford to the institution the most ready means of entering into friendly relations and correspondence with all the learned societies in the world, and of enriching its library with their current transactions and proceedings.

But perhaps the most important effect of the plan will be that of giving to the world many valuable memoirs, which, on account of the expense of the illustrations, could not be otherwise published. Every one who adds new and important truths to the existing stock of knowledge, must be of necessity, to a certain degree, in advance of his age. Hence the number of readers and purchasers of a work is generally in the inverse ratio of its intrinsic value; and consequently, authors of the highest rank of merit are frequently deterred from giving their productions to the world on account of the pecuniary loss to which the publication would subject them. When our lamented countryman, Bowditch, contemplated publishing his commentary on *La Place*, he assembled his family and informed them that the execution of this design would sacrifice one-third of his fortune, and that it was proper his heirs should be consulted on the subject which so nearly concerned them. The answer was worthy of the children of such a father: "We value," said they, "your reputation more than your money." Fortunately, in this instance, the means of making such a sacrifice existed; otherwise one of the proudest monuments of American science could not have been given to the world. In a majority of cases, however, those who are most capable of extending human knowledge are least able to incur the expense of the publication. Wilson, the American Ornithologist, states, in a letter to Michaux, that he has sacrificed everything to publish his work: "I have issued," he says, "six volumes, and am engaged on the seventh, but as yet I have not received a single cent of the proceeds." In an address on the subject of natural history, by one of our most active cultivators of this branch of knowledge, we find the following remarks, which are directly in point: "Few are acquainted with the fact that from the small number of scientific works sold, and the great expense of plates, our naturalists not only are not paid for their labors, but suffer pecuniary loss from their publications. Several works on different branches of zoology, now in course of publication, will leave their authors losses to an aggregate amount of \$15,000. I do not include in this estimate works already finished—one, for instance, the best contribution to the natural history of man extant, the publication of which will occasion its accomplished author a loss of several thousand dollars. A naturalist is extremely fortunate if he can dispose of 200 copies of an illustrated work, and the number of copies printed rarely exceeds 250." It may be said that these authors have their reward in the reputation which they thus purchase; but reputation should be the result of the talents and labor expended in the production of a work, and should not in the least depend upon the fact that the author is able to make a pecuniary sacrifice in giving the account of his discoveries to the public.

Besides the advantage to the author of having his memoir published in the *Smithsonian Contributions* free of expense, his labors will be given to the world with the stamp of approval of a commission of learned men, and his merits will be generally made known through the reports of the institution. Though the premiums offered may be small, yet they will have considerable effect in producing original articles. Fifty or a hundred dollars awarded to the author of an original paper, will, in many instances, suffice to supply the books, or to pay for the materials, or the manual labor required, in prosecuting the research.

There is one proposition of the programme which has given rise to much discussion, and which, therefore, requires particular explanation; I allude

to that which excludes from the contributions all papers consisting merely of unverified speculations on subjects of physical science. The object of this proposition is to obviate the endless difficulties which would occur in rejecting papers of an unphilosophical character; and though it may in some cases exclude an interesting communication, yet the strict observance of it will be found of so much practical importance that it cannot be dispensed with. It has been supposed, from the adoption of this proposition, that we are disposed to undervalue abstract speculations: on the contrary, we know that all the advances in true science—namely, a knowledge of the laws of phenomena—are made by provisionally adopting well-conditioned hypotheses, the product of the imagination, and subsequently verifying them by an appeal to experiment and observation. Every new hypothesis of scientific value must not only furnish an exact explanation of known facts, but must also enable us to predict, in kind and quantity, the phenomena which will be exhibited under any given combination of circumstances. Thus, in the case of the undulatory hypothesis of light, it was inferred, as a logical consequence, that if the supposition were true that light consisted of waves of an ethereal medium, then two rays of light, like two waves of water under certain conditions, should annihilate each other, and darkness be produced. The experiment was tried, and the anticipated result was obtained. It is this exact agreement of the deduction with the actual result of experience that constitutes the verification of an hypothesis, and which alone entitles it to the name of a theory, and to a place in the transactions of a scientific institution. It must be recollected that it is much easier to speculate than to investigate, and that very few of all the hypotheses imagined are capable of standing the test of scientific verification.

For the practical working of the plan for obtaining the character of a memoir, and the precaution taken before it is accepted for publication, I would refer* to the correspondence relative to the memoir now in process of publication by the institution. The memoir was referred to the American Ethnological Society, with a request that a committee of its members might be appointed to examine and report on its character, as to fitness for publication in the Smithsonian Contributions to Knowledge. On the favorable report of this committee, and on the responsibility of the society, the memoir was accepted for publication.

As it is not our intention to interfere with the proceedings of other institutions, but to co operate with them, so far as our respective operations are compatible, communications may be referred to learned societies for inspection, as in the case of the above mentioned memoir, and abstracts of them given to the world through the bulletins of these societies, while the details of the memoirs and their expensive illustrations are published in the volumes of the Smithsonian Contributions. The officers of several learned societies in this country have expressed a willingness to co-operate in this way.

Since original research is the most direct means of increasing knowledge, it can scarcely be doubted that a part of the income of the bequest should be appropriated to this purpose, provided suitable persons can be found, and their labors be directed to proper objects. The number, however, of those who are capable of discovering scientific principles is comparatively

* See first volume of the Smithsonian Contributions.

small ; like the poet, they are "born, not made," and, like him, must be left to choose their own subject, and wait the fitting time of inspiration. In case a person of this class has fallen on a vein of discovery, and is pursuing it with success, the better plan will be to grant him a small sum of money to carry on his investigation, provided they are considered worthy of assistance by competent judges. This will have the double effect of encouraging him in the pursuit, and of facilitating his progress. The Institution, however, need not depend upon cases of this kind, even if they were more numerous than they are, for the application of its funds in the line of original research. There are large fields of observation and experiment, the cultivation of which, though it may afford no prospect of the discovery of a principle, can hardly fail to produce results of importance both in a practical and a theoretic point of view. As an illustration of this remark, I may mention the case of the investigations made a few years ago by committees of the Franklin Institute, of Philadelphia. The Secretary of the Treasury of the United States placed at the disposal of this society a sum of money, for the purpose of making experiments with reference to the cause of the explosion of steam-boilers. A committee of the society was chosen for this purpose, which adopted the ingenious plan of writing to all persons in the United States engaged in the application of steam, and particularly to those who had observed the explosion of a steam-boiler. In this way opinions and suggestions in great variety, as to the cause of explosions, were obtained. The most plausible of these were submitted to the test of experiment : the results obtained were highly important, and are to be found favorably mentioned in every systematic work on the subject of steam which has appeared, in any language, within the last few years. New and important facts were established ; and, what was almost of as much consequence, errors which had usurped the place of truth were dethroned.

In the programme, examples are given of a few subjects of original research to which the attention of the Institution may be turned. I will mention one in this place, which, in connexion with the contents of our first memoir, may deserve immediate attention. I allude to a small appropriation made annually for researches with reference to the remains of the ancient inhabitants of our country. This is a highly interesting field, and what is done in regard to it should be done quickly. Every year the progress of civilization is obliterating the ancient mounds, cities and villages are rising on the spots they have so long occupied undisturbed, and the distinctive marks of these remains are every year becoming less and less legible.

In carrying out the spirit of the plan adopted, namely, that of affecting men in general by the operations of the Institution, it is evident that the principal means of diffusing knowledge must be the *press*. Though lectures should be given in the city in which Smithson has seen fit to direct the establishment of his Institution, yet, as a plan of general diffusion of knowledge, the system of lectures would be entirely inadequate ; every village in our extended country would have a right to demand a share of the benefit, and the income of the institution would be insufficient to supply a thousandth part of the demand. It is also evident that the knowledge diffused should, if possible, not only embrace all branches of general interest, so that each reader might find a subject suited to his taste, but also that it should differ in kind and quality from that which can be readily obtained through the cheap publications of the day. These conditions will be fully

complied with in the publications of the series of reports proposed in the programme. A series of periodicals of this kind, posting up all the discoveries in science from time to time, and giving a well digested account of all the important changes in the different branches of knowledge, is a desideratum in the English language. The idea is borrowed from a partial plan of this kind in operation in Sweden and Germany; and for an example of what the work should be, I would refer to the annual report to the Swedish Academy of its perpetual secretary, Berzelius, on physical science. The reports can be so prepared so as to be highly interesting to the general reader, and at the same time of great importance to the exclusive cultivator of a particular branch of knowledge. Full references should be given, in footnotes, to the page, number or volume of the work from which the information was obtained, and where a more detailed account can be found. It is scarcely necessary to remark, that the preparation of these reports should be intrusted only to persons profoundly acquainted with the subjects to which they relate—namely, to those who are devoted to particular branches, while they possess a knowledge of general principles. Sufficient explanations should be introduced to render the report intelligible to the general reader, without destroying its scientific character. Occasionally reports may be obtained from abroad—as, for example, accounts of the progress of certain branches of knowledge in foreign countries—and these may be translated, if necessary, and incorporated into other reports, by some competent person in this country.

Besides the reports on the progress of knowledge, the programme proposes to publish occasionally brief treatises on particular subjects. There are always subjects of general interest, of which brief expositions would be of much value. The preparation of these, however, should be intrusted to none but persons of character and reputation, and should be subjected to a revision by competent and responsible judges before they are given to the public. They may be presented in the form of reports on the existing state of knowledge relative to a given subject, and may sometimes consist of memoirs and expositions of particular branches of literature and science, translated from foreign languages. The reports and treatises of the institution, sold at a price barely sufficient to pay the expense of printing, will find their way into every school in our country, and will be used not as first lessons for the pupil, but as sources of reliable information for the teacher.

The second section of the programme gives, so far as they have been made out, the details of the part of the plan of organization directed by the act of Congress establishing the Institution. The two plans, namely, that of publication and original research, and that of collections of objects of nature and art, are not incompatible, and may be carried on harmoniously with each other. The only effect which they will have on one another is that of limiting the operation of each, on account of the funds given to the other. Still, with a judicious application, and an economical expenditure of the income, and particularly by rigidly observing the plan of finance, suggested by Dr. Bache, in the construction of the building, much good may be effected in each of the two branches of the institution. To carry on the operations of the first, a working library will be required, consisting of the past volumes of the transactions and proceedings of all the learned societies in every language. These are the original sources from which the most important principles of the positive knowledge of our day have

been drawn. We shall also require a collection of the most important current literature and science for the use of the collaborators of the reports; most of these, however, will be procured in exchange for the publications of the Institution, and therefore will draw but little from the library fund. For other suggestions relative to the details of the library, I would refer to the report of the assistant secretary, acting as librarian.

The collections of the Institution, as far as possible, should consist of such articles as are not elsewhere to be found in this country, so that the visitors at Washington may see new objects, and the spirit of the plan be kept up, of interesting the greatest possible number of individuals. A general collection of all objects of nature and of art properly arranged and deposited in one place, would form a museum of the highest interest; but the portion of the income of the bequest which can be devoted to the increase and maintenance of the museum, will be too small to warrant any attempt towards an indiscriminate collection. It is hoped that in due time other means may be found of establishing and supporting a general collection of objects of nature and art at the seat of the general government, with funds not derived from the Smithsonian bequest. For the present, it should be the object of the Institution to confine the application of the funds, first, to such collections as will tend to facilitate the study of the memoirs which may be published in the Contributions, and to establish their correctness; secondly, to the purchase of such objects as are not generally known in this country, in the way of art, and the illustration of antiquities, such as models of buildings, &c.; and thirdly, to the formation of a collection of instruments of physical research, which will be required both in the illustration of new physical truths, and in the scientific investigations undertaken by the institution.

Much popular interest may be awakened in favor of the institution at Washington, by throwing the rooms of the building open, on stated evenings during the session of Congress, for literary and scientific assemblies, after the manner of the weekly meetings of the Royal Institution in London. At these meetings, without the formality of a regular lecture, new truth in science may be illustrated, and new objects of art exhibited. Besides these, courses of lectures may be given on particular subjects by the officers of the Institution, or by distinguished individuals invited for the purpose.

Respectfully submitted.

JOSEPH HENRY,
Secretary of the Smithsonian Institution.

REPORT OF THE ASSISTANT SECRETARY RELATIVE TO THE LIBRARY —
PRESENTED DECEMBER 13, 1848.

To the Secretary of the Smithsonian Institution :

SIR: At the last meeting of the Board of Regents the following duties were assigned to me for the year which is about to close, viz:

1. "The preparation of catalogues of books suitable for the commencement of the library, in accordance with the plan of organization adopted by the Board of Regents.

2. "The purchase of the more necessary works on bibliography.

3. "The collection and systematic arrangement for purposes of comparison of the printed catalogues of the principal libraries throughout the United States, together with information with regard to the expenditures, plans of increase, and other particulars relating to said libraries.

4. "The collection of works to which the institution may be entitled under the tenth section of the act establishing the Institution."

The first of these duties which demanded my attention after the adjournment of the Board of Regents, was the collection of the works to which the institution is entitled by the tenth section of the charter. After examining the subject carefully, I made a special report thereon to the Secretary and Library Committee, a copy of which is herewith submitted.

The next subject to which I devoted my attention was the gathering of information respecting public libraries in the United States. It is a singular, and to us a mortifying fact, that the most accurate account of American libraries was published in Germany, and has never been translated into English. In 1845, '6 there appeared in the "*Serapeum*,"* a journal published at Leipzig, a series of articles upon bibliography and libraries in the United States. These articles, forming about ninety pages octavo, were written by Hermann E. Ludewig, formerly of Dresden, at present a lawyer in the city of New York. Having a strong predilection for bibliographical pursuits, he collected, during a journey which he performed through the United States, all the information within his reach respecting the libraries, public and private, the book trade, and the bibliography of the general and local history of the country. The results of his researches have been given to the public in the articles to which I have already referred, and in an 8vo. volume of 180 pages, published for private distribution, entitled "*The Literature of American Local History; a Bibliographical Essay; New York, 1846.*" The fullness and accuracy of the details which he has given are remarkable. I have made free use of them, and have found my labors much facilitated by so doing.

I have, besides, visited and examined many of the principal libraries. I have also prepared, for the purpose of eliciting further information, a circular letter to librarians, a copy of which accompanies this report. This letter was distributed together with the first volume of our "*Contri-*

* *Serapeum. Zeitschrift für Bibliothekwissenschaft, Handschriftenkunde, und aeltere Literatur.* Heraus. von Dr. Robert Naumann, Leipzig, T. O. Weigel, 1840 ff. (See 1845, pp. 209—234, and 1846, pp. 113—172, 177—190, 190—192, 204—206.)

butions to Knowledge." I regret that the answers to the queries have not all been received, so that I am unable at present to offer a full report respecting them. The most important statistics have, however, been obtained. These are presented in an accompanying document. I beg leave here to offer some important deductions from the facts contained in this paper.

The aggregate number of volumes in the public libraries of the United States is about 1,294,000. These are distributed among 182 libraries. Forty-three of these libraries contain over 10,000 volumes each; nine over 20,000 each; and only two over 50,000. The library of Harvard University, the largest this side the Atlantic, contains, together with the libraries of the law school and divinity school, upwards of 70,000 volumes.

These statements enable us to institute an instructive comparison between our libraries and those of the principal nations of Europe. It should be premised, however, that it is a very difficult thing to procure exact statistics of libraries. With reference to France, Germany, Belgium, Russia, and Spain, we are in possession of comparatively accurate returns. With respect to Great Britain, Holland, Sweden, Denmark, and Norway, those which I give below are as accurate as I could procure, though certainly not very satisfactory. I am not acquainted with any book which gives a good account of the present condition of libraries in several of these countries except one,* to which I have not had access. For greater convenience of reference and comparison, I present these statistics in a tabular form.

The first column of the table gives the name of the country.

The second, the year to which the statistics relate.

The third, the number of public libraries.

By public libraries are not meant those exclusively which are opened to the public without restriction, but rather those belonging to public institutions, and which are accessible under proper regulations to persons who wish to consult them for literary purposes.

The fourth column contains the aggregate number of volumes in the libraries.

The fifth gives the number of libraries containing over 10,000 volumes each.

The sixth, the average number of volumes in libraries containing over 10,000 volumes each.

The seventh, the number of volumes in the largest library of each country.

The eighth, the number of volumes to every million of inhabitants.

* I allude to the *Archiv der Gesellschaft für ältere deutsche Geschichtskunde*. Herausg. v. G. H. Pertz. Bd. 8. Hannov, Hahn, 1843, 8°. Petzholdt in the *Anzeiger für Literatur der Bibliothekswissenschaft* for 1843, terms this an almost inexhaustible source of information on European Libraries.

NOTE.—Since writing the above, I have received the volume alluded to. The information which it contains, though fully justifying the expression of Petzholdt, relates principally to the manuscript treasures of the libraries, and is not of a statistical character.

Since the report was prepared, I have seen in the *Scraps*, a translation of parts of an article containing a statistical account of libraries in Europe and America, first published in the *Journal of the Statistical Society of London*, by Edward Edwards, esq., of the British Museum. The original article I have not as yet been able to procure. It appears to have been prepared with great care and a wide examination of authorities. It would doubtless have saved me much laborious research had I seen it before writing my report.

Comparative statistics of libraries in Germany, France, Great Britain, Russia, United States of America, Denmark, Belgium, Sweden, Spain, and Norway.

Name of the country.	Date of statistics.	No. of libraries.	Aggregate number of volumes.	No. of libraries with over ten thousand volumes.	Average size of libraries of over ten thousand volumes.	No. of volumes in the largest libraries.	Comparative number of books to the population. No. to every million inhabitants.
Germany, including Austria and Switzerland	1845	103	5,578,980	68	50,000	600,000	136,072
France	1841	241	4,771,000	121	35,000	800,000	145,000
Great Britain	1840	31	2,001,000	23	85,000	420,000	83,000
Russia	1843	120	1,321,115	16	69,000	461,000	28,000
United States of America	1847	182	1,294,000	43	17,000	70,000	64,000
Denmark	1840	13	660,000	5	123,000	400,000	330,000
Belgium	1841	31	614,722	16	35,000	100,000	153,000
Sweden	1841	16	358,000	7	43,000	150,000	120,000
Spain	1835	21	351,557	5	57,000	200,000	30,000
Norway	1842	14	157,783	2	74,000	126,000	150,000

This table enables us to estimate at a glance, and with a good degree of accuracy the relative value of the public provisions made in Europe and America for general intellectual culture, as well as of those for the most extensive scientific and literary research.

It will be seen that in the *number of public libraries*, France is the only country in the world which excels us. It should be observed that the returns respecting France are official and minute, including libraries of not more than 500 volumes. Many of our public schools, however, possess libraries larger than these, but they are not enumerated in our lists. If they were, they would swell the number of American libraries far beyond that of any other country in the world.

In the aggregate number of volumes in the public libraries, Germany, France, Great Britain, and Russia, are before us. Were all the district school libraries and village collections in the United States included in the estimate, we should probably take the fourth rank.

In the average size of libraries containing over ten thousand volumes we are the last of all.

In the size of the largest library we also stand last of all.

In the number of volumes, compared with the population, we rank below all but Russia and Spain.

These results show that in public provisions for the general diffusion of knowledge by means of libraries, we stand in the very first rank among the nations; and when we consider the cheapness of our publications, and the vast number of them scattered over the land, with the extent of our periodical literature, we may justly and proudly challenge a comparison with any nation in the world for the means of general culture. This, certainly, is much for a country so new, whose chief energies have, as a matter of necessity, been directed to the felling of forests, the clearing of lands, and the support of physical life. It shows, as well remarked by a foreign writer, "that the men who, with steady and vigorous hand, have known how to rule themselves, and be completely free, have well discerned the foundations upon which alone the weal of a free State can safely repose."

But this deduction, so full of encouragement, so fraught with matter for gratulation and pride, must be followed by others of a different character.

The statistics given indicate, that while no country in the world has done so much for *diffusing* knowledge, none has done so little towards furnishing the means which public libraries can supply for its *increase*. It was doubtless the first duty of the infant republic to provide that all should know something, that the mass of the people should be elevated and enlightened. It has now become her duty to see to it, that no bounds are placed to the culture that each may obtain if he chooses. Now, in the hour of her strength, she ought to provide for her citizens the means of as high culture, of as profound research, of as noble advances in science, literature, and art, as are enjoyed by the citizens of any other nation in the world. She should take care that while the poor man's son may obtain that elementary education which will enable him to perform the duties of a good and intelligent citizen, he be not, by his poverty, debarred from the higher walks of science and literature; that there be no monopoly of learning by the rich—by those who are able to study at the institutions of Europe, or to surround themselves by the books which they need at home. Our condition in these respects has been deeply lamented by our scholars.

At various times strong efforts have been made for its improvement. At length the munificent bequest of a foreigner, placed at the disposal of Congress, furnished the means of meeting this, among other demands of science and letters. In the act of Congress establishing the Smithsonian Institution, and in the acts of the Board of Regents for the organization of the same, a large public library forms a prominent feature.

It has been supposed by some, not acquainted with researches requiring many books, that very large libraries are superfluous. They calculate, perhaps, how many books a man can read in a long life, and ask what can be the use of more. Nay, even many men fond of reading feel like an English writer of some note, who describes his pain as amounting to "midsummer madness" when he entered a large library and reflected how small a number of all the books it contained he could read through.

"In my youthful days," says De Quincey, "I never entered a great library, say of 100,000 volumes, but my predominant feeling was one of pain and disturbance of mind, not much unlike that which drew tears from Xerxes, on reviewing his immense army, and reflecting that in 100 years no one soul would remain alive. To me, with respect to the books, the same effect would be brought about by my death. Here, said I, are 100,000 books, the worst of them capable of giving me some pleasure and instruction, and before I can have had time to extract the honey from one-twentieth of this hive, in all likelihood I shall be summoned away."

"Now I have been told by an eminent English author, that with respect to one single work, viz: the History of Thuanus, a calculation has been made by a Portuguese monk, which showed that barely to read over the works, and allowing no time for reflection, would require three years labor at the rate of, I think, three hours a day. Further, I had myself ascertained that to read a duodecimo volume in prose of four hundred pages, all skipping being barred, and the rapid reading which belongs to the vulgar interest of a novel, was a very sufficient work for one day. Consequently 365 per annum, that is with a very small allowance for the claims of life on one's own account and on that of one's friends, one thousand for every triennium, that is ten thousand in thirty years, will be as much as a man who lives for that only can hope to accomplish. From the age of twenty to eighty, the utmost he could hope to travel through would be twenty thousand volumes, a number not, perhaps, above five per cent. of what the mere current literature of Europe would accumulate in that period of years."

Now, supposing for a moment that there were no other use to be made of books but the reading of them through at so many pages the hour, one would think it might have occurred to this writer that there are among the frequenters of a large library a great variety of men, with a wide diversity of interests, tastes and pursuits; that though each might not be able to read through more than two thousand books—one-tenth part of the supposed number—still fifty men, whose reading was in different directions, might call for a hundred thousand.

But apart from this consideration, and above it, is another of far more importance to the scholar. It is that this view of the use to be made of a large collection of books is founded upon an utter misapprehension of the relation of books and libraries to learning.

There are three uses to be made of books by those who understand their value.

The first is for *reading*. This, paradoxical as the assertion may sound, is the least important of their uses. By reading I mean cursory perusal, such as the writer above quoted describes. Reading as a pastime—reading for the acquiring of general information—reading as a means of refining and cultivating the tastes—is, indeed, indispensable to every well educated man. And the means of such reading in this country are largely supplied by our circulating libraries, athenæums, book auctions, and cheap publications. But the scholar has need of books for other and higher purposes.

A second important use of books is for *study*. By study, I mean that vigorous mental application, which is necessary in order to fully comprehend, weigh, analyse, and appropriate the thoughts, facts, and arguments of an author. It is study which disciplines the mind; which trains the intellect for the rapid accumulation and appropriate use of knowledge. It is study which gives education, which develops the faculties. But it is evident that for study one needs even fewer books, if they be rightly chosen, than for reading.

The third use to be made of books is for *reference*.

Every man has occasion to refer to a dictionary or an encyclopædia. Yet who ever undertakes to read one through? Every one accustomed to composition sometimes has occasion to trace the history and meaning of a word. "There are cases," says Coleridge, "in which more knowledge of more value may be conveyed by the history of a word than by the history of a campaign." But to learn the history or usage of a single word we may be compelled to look into five, twenty, or fifty dictionaries in different languages.

Now the use of books by scholars is in general analogous to the use of a dictionary by any intelligent man. There are some sciences which seem to require less the aid of libraries than others. It may even be true that some important discoveries have been the result of mere accident. But such is not the general rule. The progress of science is not fortuitous. Nature does not often disclose her treasures upon a blundering invitation. She must be diligently sought. He who would make valuable discoveries, must, as a general thing, prepare himself by a thorough acquaintance with the present condition and tendencies of the science which he cultivate.

He must do more, much more. "Of every branch of the two great subdivisions of human learning," (viz: science and literature,) says an able writer, "its history is a constituent part, absolutely necessary to all who would be competent to form just opinions on its present state." He must know the past in order to appreciate the present, and in order to help shape the future. He must not only be able to place himself on the line of demarcation between the unknown and the known, but if he would penetrate the darkness of the former, he must have gained his direction by a careful tracing out of the analogies of the latter. Consequently he must give himself to long-continued, patient, laborious study of the history of science.

Moreover, it is not only necessary to study that science which one wishes to enlarge by his discoveries: he must be familiar with the subjects which are allied to it. But where can we find the limits of any science? All knowledge is bound together by an indissoluble, though sometimes an invisible bond. He who is versed in but one department of science, and is entirely ignorant of others, cannot be said to be thoroughly acquainted with any. In the words of the writer already quoted, "If books

could be arranged in order of relevancy, with respect say to natural science, from the one which is most essential to it down to the one which is least essential to it, there would be no perceptible break anywhere, no point at which natural knowledge ends and other knowledge begins." What, then, must he who would devote himself to the enlargement of one department of knowledge, wait ere he commences till he has mastered all? By no means, such is not the inference. The legitimate conclusion from the argument is, that no thorough student in any one department of knowledge can safely say that he may not need 10,000, or even 50,000, books, and many of them of a character at first sight most remote from his path, not, indeed, for the purpose of reading or of studying them, but in order to settle, by momentary references, questions which may arise, the settling of which may be of the greatest importance to his progress.

If this be true with respect to those sciences where there is the least apparent want of books, much more is it so of those whose deductions are drawn from researches among the records of the past. The demands of the statesman, the jurist, the political economist, the historian, cannot be met without furnishing the materials for the widest investigation, nor always, indeed, those of the novelist or the poet. I have sometimes heard it said that the knowledge of the middle ages to be gained from one of the novels of Sir Walter Scott is far more valuable than that to be acquired from the perusal of a library of dusty tomes. But who that has ever lived was a more constant delver amidst the dusty lore of the past, in old libraries, among worm-eaten books, than the illustrious author of these volumes. He could not otherwise have produced them. Without the large libraries we could not have had the enchanting romance.

If it be asked, whether the libraries which we already possess are not sufficient to meet this demand, we reply, in the first place, that the large libraries of Europe, containing from 200,000 to 800,000 volumes, some of them selected with great care, have not been found large enough to meet the wants of her scholars, and we may not allow that our countrymen are less fond of learning, less thorough and profound in their investigations, when they have the means of pursuing them, than their transatlantic brethren.

It may, however, justly be supposed that the number of volumes is a very inadequate criterion of the value of a library; that a judicious selection may do much to compensate for numerical inferiority, and, consequently, that our libraries, although smaller, may be more useful to learning than the larger collections of Europe. This may be sufficiently answered by applying another and the most satisfactory method of testing the real value of our libraries; which is to take some works of acknowledged learning and importance, and inquire what books were necessary for their composition, and how many of them our public libraries can furnish? This process, it will be seen, is a tedious one. I have, however, pursued it in reference to a considerable number of books on a variety of subjects. Some of the results thus obtained may be stated in a few words, and they are fair specimens of all the others.

In Mr. Wheaton's *History of International Law*—a production which reflects great credit upon American talent and scholarship, and which procured for its lamented author the honor of election to the French Institute—139 works are referred to in the notes. A much larger number were, of course, consulted, many of which are mentioned in the body of the work. Thirty-nine among the most important and expensive of those

which are formally cited, are not to be found in the largest law libraries in the United States. More than one-half of the remainder are common books, to be found in any well selected general library of 5,000 volumes. This work was written in Europe. It could not have been written in this country from the materials contained in our public libraries.

If we take a book of a different kind, demanding for its composition a thorough knowledge of the history of one of the physical sciences, and, consequently, requiring the assistance of authorities less accessible and of less general importance, the result will be all the more striking.

In the first volume of Hoefer's History of Chemistry, 251 works are referred to. Of these, about fifty are common books, to be found in almost any library of 5,000 volumes. Of the remaining 191, I cannot find 75 in all our public libraries.

The plan of our Institution contemplates the publication of a series of reports on the condition and progress of various branches of knowledge, prepared by *collaborators* who are to be furnished with all the journals, domestic and foreign, necessary to aid them in their labors. Such reports, if properly prepared, will be very useful. We need merely refer, for illustration, to those published by the Swedish Academy. But the preparation of them will require the purchase of a great number of books which are not at present to be found in our public libraries. This will be made manifest by a few facts. Of 38 publications, mostly periodical, referred to in a late report of Berzelius on the progress of chemistry, I can find but 13 in our public libraries.

Mr. J. R. Bartlett informs me that of 201 works which he refers to in his report on the progress of ethnology, 129 are not to be found in the public libraries of New York, nor in any others probably in the United States. The cost of the books which, in order to prepare his work, he had to procure at his own expense, was \$1,000. And yet this report is only a pamphlet of 151 pages.

From these facts it is manifest that there is no exaggeration in the language of one of the members of our Board of Regents, from South Carolina, who, in a report to the Senate in 1836, stated that "our whole body of literature, if collected in one place, would not afford the means of investigating one point of science or literature through all, or even a considerable portion of what has been written on it." Here, he adds, "where the foundations of government repose on the aggregate intelligence of the citizens, the assistance afforded by public institutions to the exertions of intellect is but one-tenth of that within the reach of the mind of civilized Europe."

The complaints of our scholars testify to our deficiency. Their wants have weighed heavily upon them. They have repressed genius. They may have condemned to oblivion names that would have rivalled the brightest in the history of science and letters. I might mention, it is true, Americans who have ranked among the most learned of the world. But they, like others less renowned, have had sorrowful experience of the deficiency of which we complain. They, however, in most instances, have, from their own private wealth, supplied the defects of public provisions. Had they been poor they would not generally have been the authors they were. They could not have had access to the necessary books, had they not possessed the wealth for buying them, or for crossing the Atlantic to consult them where they were already

accumulated. The pages of our literary journals, the eloquent speeches elicited in Congress by the bills to establish the Smithsonian Institution, and the united voices of the friends of good letters throughout the land bear sad and unvarying testimony to our deficiencies.

Now, to supply these wants, or, in other words, to place American students on a footing with those of the most favored country of Europe, is the design of the Smithsonian Library.

We have, as yet, been able to make no purchases, except of those books which were of immediate and indispensable importance to the officers of the Institution, including the Building Committee. It is profoundly to be regretted that we were not in a position to avail ourselves of the extraordinary opportunities for the purchase of books which have been offered in Europe during the last eight months. In May or June last, or even later, in September and October, more valuable books could have been purchased, it is said, for five thousand dollars than at ordinary times for fifty thousand. I felt it my duty to lay before the committee, last summer, the facts which I had collected on this subject, and to express the earnest hope that we might be able to profit by the juncture; but the financial arrangements of the Board entered into for the purpose of completing the building prevented any immediate appropriation for this purpose. It is gratifying to know, that although this profiting must be lost to us in particular, our country will share in it, through the exertions of the gentleman to whom—most fortunately for American scholarship—has been entrusted the task of selecting and purchasing a large library for our chief city.

I should deem it hardly necessary at this time to allude to an idle story which was circulated about a year ago, to the purport that the Institution had expended \$2,500 for the purchase of an old Bible, valuable principally as a typographical curiosity, were it not that many of our citizens are not to this day disabused respecting it, and really suppose that we committed the folly thus imputed to us. No such purchase has been made or contemplated. On the contrary, I believe that all the officers of the Institution are decidedly opposed to any such expenditure of the fund. We wish books for use and not for the gratification of mere curiosity.

By a decision of the Regents, the income of the institution, which, after the completion of the building, will amount, it is hoped, to nearly \$40,000 per annum, will be permanently divided between two great methods of increasing and diffusing knowledge which had been proposed and discussed; the one by publications and original research, the other by collections in literature, science, and art. The share of money which, in accordance with this arrangement, will fall to the library, will not be sufficient to enable it to meet at once the demands of our expectant scholars. It will be many years before their wishes can be fully gratified; but in the meantime, by a wise expenditure of the funds, and by other assistance which our arrangements provide for, it is hoped that the library will be such as to afford great aid to learning.

The plan of collecting the library is as follows :

1. To purchase such books as may be needed by the various officers of the institution, and by persons preparing memoirs and reports for our publications, or engaged in researches under the direction of the Secretary.
2. To procure such works as may be required to render the institution a centre of bibliographical reference.
3. To procure a complete collection of the memoirs and transactions of learned societies throughout the world, and an entire series of the most

important, scientific, and literary periodicals. The continuation of these may be obtained in exchange for our own publications.

4. The remaining funds of this department will be devoted to the purchase of books of general importance; at first, most especially those which are not to be found in other libraries of the country.

In pursuance of this plan, I have been occupied in making lists of books to be purchased.

With reference to the first class of books, namely: those needed by the authors and collaborators, it is, of course, impossible to do any thing more than to meet wants as they arise.

Of the second class of books, viz: those necessary to make the institution a centre of bibliographical knowledge, I have the honor herewith to present a list selected with great care and the best counsel which I could command. This list contains about 3,000 volumes. The work of Namur, published in 1837, purporting to be a complete catalogue of bibliographical works, contains 10,236 titles. A complete bibliographical library would contain nearly 20,000 volumes. The 3,000 volumes of the list, now presented, are not therefore to be considered as constituting a complete catalogue of books in this department, but merely as a selection of those most immediately important.

Every list of this kind should include not only works professedly bibliographical, but also histories of literature, of science, and of art, as well as many biographical and critical works.

It is impossible to estimate too highly the value of such a collection. In a large library these works are the guides to research, showing what to read, study, or consult. In the absence of such a library, they supply to some extent the deficiency by describing books in such a way as oftentimes to enable us to dispense with the books themselves.*

And yet the importance of bibliographical studies is in this country but

* "In literature and science books are the tools, and it is impossible to under-estimate the use of a critical acquaintance with them except to those who underrate knowledge itself. Of every branch of the two great subdivisions of human learning, (viz: literature and science,) its history is a constituent part, absolutely necessary to all who would be competent to form just opinions on its present state.

"The scientific societies are not very anxious to have in their libraries the rare books belonging to their several departments. For this, one reason is want of funds; but this might be overcome if it were not for another, namely, a general indifference among the members to exact and minute knowledge of the history of science. The *peu nous importe au reste* with which Delambre often dismisses a secondary point, of which a satisfactory settlement does not come readily to hand, had been readily agreed to by his critics and his readers. The consequence is, that any one who proceeds to examine closely the actual records of the progress of science, finds confusion upon confusion and mistake upon mistake in all matters which are not of general interest.

"It is worthy of note how completely several of the best histories of branches of science are on a bibliographical basis, proceeding rather from book to book than from man to man. Such are those of Weidler, Dekambre, and Kästner, for though the nominal arrangement of the first is by men in order of time, yet the men are only constituent parts of their own title pages.

"In literary history books are the main facts, and none but those who have tried it can tell how many difficulties are thrown in the way of an investigator who has truth for his object and permanent rules of evidence for his guide, by the misstatements which exist upon works which, however necessary it may be to know them, it may hardly be worth while to name. The date, the author's christian name, the very size of a book may be the turning points of the proof of a fact. The inquirer cannot have all the books before him, of many he wants only the proper description, and being certain of this, he could almost dispense with any knowledge of the contents.

"But let the reader *think* what he pleases, the historian of science *knows* that he cannot do well without complete and correct bibliography."—*Dublin Review*, September, 1846, *Art.* 1, on *Mathematical Bibliography*.

too little appreciated. In truth, the neglect of them is the most fruitful source of superficial, conceited, and rash authorship. On the continent of Europe, however, they are held in the highest esteem. This is doubtless one principal cause of the acknowledged superiority of the Germans in all matters requiring wide research.

Every student worthy of the name, when about to investigate a subject, wishes to know first what has been done by others in the same field.

Now, on almost every important branch of learning some diligent scholar has collected from the whole domain of literature the books pertaining thereto, arranged them for convenience of reference, analyzed their contents, and described their absolute and relative merit, with their external peculiarities and history. He has thus given a *bibliography* of that branch of knowledge. Such a work should manifestly be the first to be taken up, and among the last to be laid down by any one who would intelligently study that subject. A collection of such works, pertaining to all departments of knowledge, ought to be the first purchase for every general library.

Yet there is no respectable collection of them in any of our public libraries. The best is, I believe, that of Brown University, which contains but a few hundred volumes. Without question, therefore, by procuring the books necessary for carrying out the plan of making the library a centre of bibliographical reference, we shall furnish one class of books most immediately important to American scholars, as well as one most needed in making judicious selections for the future, and in aiding other libraries in the country in their choice of books.

The selection here offered is intended to cover nearly the whole ground of bibliography, and is arranged under the following divisions:

1. BIBLIOTHECAE BIBLIOGRAPHICAE, or catalogues of bibliographical works.

2. ELEMENTARY BIBLIOGRAPHY, including treatises of the origin and progress of writing; of ancient manuscripts, their materials, form, ornaments, preservation, and the method of deciphering them; of printing, its history, and practice; of the arts of engraving, binding, paper-making, &c.; of the forms of books; of the rights of authors, publishers, and readers; of the book trade; of the use and abuse of books; of libraries, their history, statistics, selection, arrangement, preservation and use.

3. PRACTICAL BIBLIOGRAPHY. Works designed to be used in the selection and purchase of books. These may be—

(1.) *Universal*, comprising books in all languages, on all subjects, and of all periods.

(2.) *Limited*—

a To particular countries or languages.

b To particular periods of time.

c To particular branches of knowledge.

d To works classed according to some accidental peculiarity, as rare, anonymous, pseudonymous, polyonymous works, books privately printed, books prohibited, books condemned to be burned, &c.

e To particular kinds of composition, as poetry, proverbs, &c.

Under most of these heads are comprised works of several kinds, viz: 1. The history of the subject; 2. The bibliography, properly so called, i. e. the *catalogue raisonné* of all books relating to it; 3. The biography of its

cultivators; 4. The journals which contain the record of its progress. Thus, in the department of natural history, would be included Cuvier's History of the Natural Sciences, Engelmann's Bibliography of Natural History, Callisen's Biographical Dictionary of Naturalists, and the Annals of the Natural Sciences; and inasmuch as neither of these is perfect of its kind, there must be many others of each description.

With regard to the third class of books, viz: the memoirs and transactions of learned societies, I have made, and herewith present a list which I believe to be nearly complete, of all the publications of learned societies in actual operation throughout the world. Doubtless these publications possess various grades of merit. But it is difficult, and I think undesirable, to reject any of them. Papers of the greatest importance are sometimes published in the transactions of the most obscure provincial academies.

The Department of Public Instruction of the French government published in the year 1817 the first volume of a work intended to be continued annually, entitled "*Annuaire des Sociétés Savantes de la France et de l'Etranger.*" The volume for the first year, an octavo of more than 1,000 pages, contains historical sketches of all the learned societies in France, the regulations of the institutions, an account of their various publications, and other works, and the names of their members. A similar account of the academies of other countries was promised for the second year, but I cannot learn that it has yet appeared. The labor upon it was probably interrupted by the revolution of February, and has not yet been resumed.

The lists which I now present are made from the Rev. Dr. Hume's "*Learned Societies and Printing Clubs of the United Kingdom*" for Great Britain, the "*Annuaire*" for France, and from various other sources, principally from the first volume of the catalogue of the printed books in the British Museum for other countries.

The remaining duty assigned me was the systematic arrangement for purposes of comparison of the printed catalogues of the principal libraries in the United States. This, also, is a part of the plan for rendering the Institution a centre of bibliographical knowledge.

I have commenced the work in the following manner: Taking the printed catalogue of the library of Harvard University, I separate the titles and paste each one upon a card about six inches long by four wide. This size of card was selected in order to allow room for long titles with the annotations which may be necessary. The letters "*H. U.*" are to be stamped upon the card to denote that the book belongs to Harvard University. When the titles of the Harvard catalogue are finished it is proposed to begin upon the catalogue of the Philadelphia Library. Whenever the titles are the same it will be sufficient to stamp upon the card in addition to the letters "*H. U.*" the letters "*P. L. C.*," thus denoting that the book belongs also to the Philadelphia Library Company. When new titles are found, they should be placed upon cards like the others. The catalogues of all the other libraries are to be treated in like manner. When the arrangement of the printed catalogues is completed, it will be necessary to obtain manuscript continuations. These must be copied on the same kind of cards. It will then be easy to arrange the titles in alphabetical or other order, and to preserve them in such order, however frequent and numerous the accessions which may be made.

It is hardly necessary to enlarge upon the great value of such a cata-

logue. From it we could readily ascertain what books there are in the various public libraries, and how well each department of learning is provided for. We should thus be enabled to fill up our own library with a more intelligent reference to the actual wants of the country.

Such a catalogue will also enable us to direct the student to the books which he may want, if they are to be found in any of our libraries.

There will be also an incidental advantage gained by it of great importance to the department of American history and bibliography. The institution proposes to publish among its "Contributions" a complete bibliography of the materials of American history prior to A. D. 1700. This will be one of the most valuable contributions ever offered to the facilities for studying the early history of our country. But it is only a commencement. The books relating to and printed in America after 1700 are vastly more numerous and certainly of great importance. They relate to the period of our early struggles, to the achievement of our independence, to the formation and consolidation of our government. No proper bibliographical survey of this wide field has ever yet been made. The books and pamphlets relating to it were published, the larger part, perhaps, in America, but many of them in Europe, and they are now scattered far and wide. Some very valuable collections have been made of them, the best of which is due to the diligence, learning, and devotion of a distinguished gentleman of this city.* No collection, however, that has yet been made can be considered complete. Still we may safely say that a large proportion of the books extant relating to this period are to be found among the libraries of the United States. One great difficulty heretofore encountered by our bibliographers has been to ascertain where they are preserved. Many libraries have no printed catalogues; of others the catalogues are far in arrears. From our proposed general catalogue it will be easy to find every book of this description which is preserved in any of our collections, and to ascertain at a glance the place of its deposite.

I have made, of course, but a commencement on this work. To bring it to completion will be the labor of more than another year.

In conclusion, I may add that the plans in operation for the library will, it is hoped, soon render it a valuable aid to American scholarship. Its sphere is quiet and unobtrusive, but none the less useful. Ere long it is destined, we hope, to rank among the largest, the best selected, and the most available literary treasure-houses of the world. Wherever such a collection is formed, be it in a large metropolis or a provincial town, thither students will resort. They will soon give tone and character to society around. Even in the great emporium of commerce, under the overshadowing power of trade, its influence would soon be recognized. Here, at the political centre of the nation, where assemble her statesmen and her orators, under a benignant sky, amid scenes consecrated in her history, a spot as accessible as any other from all parts of the country, is the most favorable location for a great library. Such a library will attract hither our scholars, now pursuing their investigations in Europe, or mourning at home over noble projects abandoned before the necessity of so long and

*I allude to the library of Colonel Peter Force. It contains more than 20,000 books, with large numbers of manuscripts, pamphlets, handbills, maps, &c., mostly relating to American history—an invaluable collection, one of the chief ornaments of our city, where we trust it will ever remain.

expensive a pilgrimage. It will render Washington the centre of American learning. Its influences will descend noiselessly upon the community around, and spread in ever-widening circles over the land, softening the asperities of party contentions, calming the strifes of self interest, elevating the intellect above the passions and the senses, cherishing all the higher and nobler principles of our being, and thus contributing more than fleets and armies to true national dignity.

Respectfully submitted.

C. C. JEWETT.

No. 2.

The Executive Committee submit to the Board of Regents the following report of the expenditures, state of the finances and condition of the Smithsonian Institution.

The whole amount of Smithsonian's property received into the treasury of the United States on the 1st September, 1838, was \$515,169. The interest which had accrued on the same up to 1st July, 1846, when, by the act of Congress, the funds were placed under the direction of the Board of Regents, was \$242,129. This sum, together with the accruing interest, the Board of Regents were authorized to expend in the erection of a building and in defraying the current expenses of the institution.

During the last two years and four months, in which the institution has been under the charge of the Regents, there has been expended towards attendance of the Regents, and incidental and miscellaneous expenses, the erection of the building, improvement of grounds, salaries of officers, the sum of \$106,520 19, as will be seen in the following exhibits, viz:

Construction of buildings, including superintendence	\$51,678 48
Expenses of architect's office, traveling expenses, stationery, draughtsman, &c.	1,213 00
Laying corner stone	21 00
Examination of quarries and specimen walls	74 00
Improvement of grounds	1,290 88
Publication of "Hints on Public Architecture"	1,147 25
Occultations and researches	525 00
Philosophical and chemical apparatus	332 70
Public lectures	80 00
Publication of Contributions to Knowledge	3,709 31
Library, and salary of librarian	1,741 38
Pay of messenger	388 13
Recording and copying for Board of Regents,	
Executive Committee, &c.	\$116 54
Do for Secretary	232 00
	348 54
Incidental expenses	533 10
Do for Secretary, including office rent	177 65
	710 75
Expenses of Board of Regents and Committees	966 90
Expenses of Secretary consequent upon the delivery of lectures at Princeton, and expenses to New York and Philadelphia on business of the Board	280,50

[N. B. The proceeds of the lectures at Princeton, \$1,000, have been paid by the Secretary.]

House rent of Secretary for two years	-	-	\$550 00
Payments to Secretary on account of salary	-	-	3,824 31
			<hr/>
			68,880 17
Disbursements as exhibited by previous reports	-	-	37,670 02
			<hr/>
			106,550 19
			<hr/>
During the same time, there has been received from interest and the sale of treasury notes, the sum of	-	-	\$115,964 60
From the Secretary's lectures at Princeton	-	-	1,000 00
			<hr/>
			116,964 60
			<hr/>
Leaving a balance on hand of	-	-	10,444 41
			<hr/>

Funds of the Institution.

Amount of Smithson's bequest	-	-	\$515,169 00
Interest due thereon to 1st July, 1846	-	-	242,129 00
			<hr/>
			\$757,298 00
			<hr/>
Balance on hand 1st January, 1849	-	-	10,444 21
Treasury notes on hand	-	-	226,000 00
Permanent fund	-	-	515,169 00
			<hr/>
			751,613 41
			<hr/>
If to this we add the premium of 8 per cent., which treasury notes now bear, say	-	-	18,000 00
			<hr/>
The funds of the Institution will be	-	-	773,613 21
			<hr/>

Thus showing, that after an expenditure of \$106,550 19, the cash on hand and the value of the cash investments, exceed the amount on hand, on the organization of the Institution, in September, 1846, by nearly \$16,000, subject, however, to a few outstanding accounts not yet presented, estimated at \$7,500.

The committee are confident that by continuing the system of finance recommended by the committee and adopted by the Board of Regents at their last annual session, the building can be completed and the institution be put into full operation at the end of three years from March next, without withdrawing more than \$100,000 from the fund of \$242,169 set apart by Congress for buildings, &c., leaving the residue, \$142,000, to be added to the amount of the original bequest of Smithson, and making the permanent fund of the Institution \$657,000, yielding an annual income of \$39,420, (which may thereafter be readily increased to \$40,000 per annum,) for the increase and diffusion of knowledge.

During the past year the committee has held frequent meetings at the call of the Secretary, for consultation with that officer on the affairs of the Institution. The several operations mentioned in the Secretary's report

were discussed at these meetings, and several small appropriations were authorized, which arose from contingencies unforeseen by the Board, and which were duly charged and exhibited in the accounts of the committee. The Board of Regents having authorized the Executive Committee to make compensation to the Assistant Secretary, acting as librarian, for his services to the Building Committee, and relative to the library, have granted him the sum of \$250.

An extra edition of the Secretary's report for the year 1847 was ordered to be printed for the use of the Board of Regents from the forms used by the printer for Congress.

Mr. Bache and the Secretary were appointed a committee to confer with Dr. Hare relative to the presentation of his extensive and valuable chemical apparatus to the Institution; which committee afterwards reported that Dr. Hare had unconditionally presented his apparatus to the Institution, and that workmen had been employed to clean and pack the same for removal to Washington. A complete set of the "*Annales de Chimie*" was authorized to be purchased of Dr. Hare, to accompany his apparatus.

The Secretary was authorized to order, conditionally, the instruments necessary to complete the outfits of Lieutenant Gillis of the navy, on his scientific expedition to *Chilé*.

A number of propositions relative to publications, researches, &c., have been submitted to the Executive Committee, and have been referred to the Secretary and Dr. Bache.

On consultation with the Secretary and Librarian, the committee recommends the following appropriations for the operations of the Institution during the year commencing on the 19th March next, viz:

For publication of Contributions to Knowledge	-	-	\$3,000 00
Scientific researches and computations	-	-	700 00
Meteorological instruments and researches	-	-	1,000 00
Expenses of public lectures, including lights	-	-	500 00
Publication of scientific reports	-	-	500 00
General catalogue of American libraries	-	-	1,000 00
Purchase of bibliographical works and books of general reference	-	-	2,000 00
Binding of books, blank books, stamps, certificates, &c.	-	-	250 00
Purchase of books needed by authors of memoirs, reports, &c.	-	-	400 00
General expenses, including salaries of officers, expenses of Board and committees, clerk hire, postage, &c.	-	-	8,000 00
			<hr/>
			17,350 00
			<hr/>

The aggregate of the above estimates exceeds, by the sum of \$2,350, the amount limited by the finance resolutions of the Board of Regents, December 1, 1847, as applicable each year for the operation of the Institution, exclusive of the building fund, until the year 1852, when the building is to be completed and the entire income of the Institution left free for the prosecution of the objects contemplated by the acts establishing the Institution; but as the present available funds exceed the amount anticipated when these resolutions were adopted, it is believed that the

additional \$2,350 may be spared in the ensuing year for the objects specified, without trenching on the annual building fund, or endangering the accomplishment of the end had in view by the Board of Regents in adopting the finance resolutions of December 1, 1847, namely, the saving of a certain sum to be added to the permanent fund. In conclusion, the committee would beg leave to submit to the Board that the amount and variety of disbursements which the Executive Committee have to make, and the proper keeping and recording the accounts and appropriations of the Institution, require the services of a skillful accountant and book-keeper for the performance of this duty, as well as the examination of accounts for payment, the preparation of estimates on which to base requisitions, the preparation of statements of expenditures for the examination and approval of the proper officers, as required by law, preliminary to their presentation to the Treasury Department for settlement, and such other duties of accountant, book-keeper, and clerk, as the Board of Regents, the Executive, and Building Committees, and the Secretary may have occasion to require of him.

The committee therefore recommend the appointment of such an officer, at an annual salary not exceeding four hundred dollars.

All of which is respectfully submitted,

W. W. SEATON,
J. A. PEARCE,
A. D. BACHE.

WASHINGTON, *January 1* 1849.

No. 4.

During the past year the Smithsonian building has been advanced in a manner satisfactory to the committee.

An inexhaustible supply of freestone of excellent color and quality is afforded by the quarries; and the deliveries have met with no such interruptions from failures in the canal as were experienced last year, to the great delay of work upon the building.

The east wing of the building, and the adjacent connecting range, are so far completed that the architect promises a state of readiness for occupation early in January. He reports the whole interior of this part to be finished, with the exception of the shelving of the cases—purposely delayed to enable the Secretary of the Institution to adjust it to the apparatus which it is to receive. He reports, also, that the furnaces for supplying warm air to these rooms, and also the ventilating apparatus, will be completed at the same time.

The west wing and its connecting range are completed externally, and the interior of the hall of the gallery of art—intended to be used temporarily as a library—is well advanced. A portion of the book-cases are in progress, and will be placed in this apartment until the library-room proper, in the centre building, shall be ready for their reception.

The foundations of the whole of the main building, including the towers, are laid, and the superstructure carried about five feet high. The campanile and octagonal towers, and two smaller corner towers of the centre, are 30 feet above their foundations.

The architect also represents that the contractor, Mr. Cameron, has cut

all the stone for the first story of the main building, and designs, if possible, to have the whole of this part of the structure under roof before the winter of 1849-'50, in order the better to protect the walls.

The committee see no reason to doubt that the whole structure will be completed within the time specified in the contract, namely, by the 19th day of March, 1852.

The total amount expended on the building and on the fencing of the lot, including superintendence, and all incidental expenses connected therewith, up to the 1st of December, 1847, was, as stated at that time - - \$25,002 67

The amount expended on the building and its appurtenances from the 1st of December, 1847, to the 31st December, 1848, is as follows:

Paid Mr. Cameron, contractor	-	-	-	\$50,860 00
Paid Mr. Renwick, architect's salary	-	-	-	1,800 00
Paid Mr. Renwick for travelling expenses	-	-	-	330 94
The expenses of architect's office, including furniture for and incidental expenses of the same, drawing instruments, stationery, and pay of draughtsman	-	-	-	253 69
Paid Mr. Robert Mills, assistant architect and superintendent, for part of the year	-	-	-	392 73
Paid Mr. Brown, superintendent, for three months	-	-	-	187 50
Paid for improvement of grounds	-	-	-	109 88
Total	-	-	-	<u>\$53,934 74</u>

The total expenditure on the Smithsonian building from the beginning up to the 31st of December, 1848, may be thus stated :

Paid Mr. Cameron, contractor for the building	-	-	\$71,700 00
Paid Mr. Renwick, architect, as salary	-	-	3,475 48
Paid Mr. Renwick for travelling expenses	-	-	629 78
The expenses of architect's office, including furniture for and incidental expenses of the same, stationery, drawing instruments, and pay of draughtsman	-	-	583 23
Paid Mr. Mills, as assistant architect and superintendent	-	-	1,247 84
Paid Mr. Brown, as superintendent, for three months	-	-	187 50
For improvement of grounds	-	-	743 38
For water-pipes and laying the same	-	-	660 00
Making a total to the end of the year 1848, of	-	-	<u>79,227 21</u>

At the last annual meeting (December, 1847,) it was resolved that there should be considered applicable to the building, (including preceding expenditures,) up to the 19th day of March, 1848, the sum of - - - \$42,000 00
And for the year ending March 19, 1849, the further sum of 52,000 00

Total	-	-	94,000 00
But, as shown above, the expenditures to the end of the year 1848, have been	-	-	<u>79,227 21</u>

Leaving a balance applicable, of the building fund, between 1st January and 19th March, 1849, of - - 14,772 79

Judging from the progress already made, the committee are of opinion that the contractor will be able to finish the building, and all other matters comprised in his contract, for the stipulated amount; and that all expenditures connected with the building, including the laying out of the grounds, planting, sodding, fencing, road-making, heating, ventilating, &c., may be comprised within the limit of \$250,000, set by resolution of the board at the last meeting.

During the past year the committee have entered into contract, amounting to \$1,050, with Mr. John Douglass, of Washington, for enclosing the grounds of the Institution with a hedge, and for planting trees and shrubbery. The architect having marked out the paths and roads, and indicated the positions of the trees and shrubs, these, comprising about 160 species, principally American, have already, for the greater part, been planted, as well as the surrounding hedges, which are to consist of pyrocanthus, Osage orange, Cherokee rose, and hawthorn, respectively, on the four sides of the lot. Investigations and inquiries that have been made on this subject, satisfy the committee that this climate is favorable to the growth and maintenance of hedges, and that for a moderate expense a permanent and beautiful enclosure will be secured. The architect has been requested to prepare drawings and estimates of the gateways necessary to connect the building with the adjacent streets.

Proposals have been obtained for putting up furnaces in the east wing; also, for sodding a portion of the ground immediately around the building, and for making permanent roads and paths from the streets to the building and through the grounds; but it is not contemplated to engage in these last-mentioned works at present.

In relation to the work entitled "Hints on Public Architecture," prepared by the late Chairman of the Building Committee, for publication by that committee under resolution of the Board, it is to be stated that the manuscript has been submitted, under vote of the committee, to the inspection of Judge J. K. Kane, of Philadelphia, Gouverneur Kemble, esq., of New York, and President Everett, of Cambridge University. From all of whom letters communicating their opinions of the work have been received, and are submitted with this report.

Mr. Owen, in a late letter to one of the committee, states his intention to be in New York by the 20th December, to superintend the printing; the printer refusing without his supervision and arrangement of the illustrations, &c., to put it to press, and expresses his confident belief that it will issue by the 10th of February—certainly, before the adjournment of Congress.

The architect of the Institution, who has drawn many of the illustrations, and superintends the engraving gratuitously, states that all the engravings are ready, or nearly so, and that the illustrations will amount to upwards of 100, of which six will be lithographs and the remainder wood-cuts by the best engravers in the country.

The wood-cuts generally do great credit to the engravers; a few of the principal ones have been brought on by the architect, and are herewith laid before the board.

The expense of the engravings contracted for will be \$2,000, of which \$ has been paid up to 1st December, 1848, the remainder being due the engravers.

The vestry of Grace Church, in the city of New York, have presented to the committee a lithograph of that building, which will cost the vestry

\$100. The draughtsman, Mr. Wade, Messrs. Bobbett & Edmonds, engravers, and Mr. Putnam, the publisher, have presented a beautiful illustrated title page which was designed by the architect of the building.

As it may be satisfactory to the board to learn as much as can now be communicated in relation to such expenditures—not embraced in the contract with Mr. Cameron—as have been, or will be, necessary upon the building and grounds; and which must fall within the building fund of \$250,000—the committee proceed to add the following statement:

Amount of Mr. Cameron's contract	-	-	-	\$205,250
Remainder applicable to other objects connected with the building or grounds than those provided for in said contract	-	-	-	44,750
				<u>250,000</u>
Amount applicable as above	-	-	-	44,750
Portions of the expenditures now referred to, are either fixed and definite in their nature, or have been already settled by resolution; they are as follows:				
Architect's salary for five years	-	-	-	9,000
Superintendent's salary for five years	-	-	-	5,000
Incidental expenses allowed to architect	-	-	-	2,000
Facing area wall with cut stone, extra work, allowed by resolution	-	-	-	480
Adding battlements to cloisters of east wing, extra work, allowed by resolution	-	-	-	200
Additional cases for apparatus, ordered by Secretary	-	-	-	200
Contract for hedging, with Mr. Douglass	-	-	-	250
Contract for planting trees and shrubs, with the same person	-	-	-	800
Furnaces for warm air, registers, &c., already contracted for—say	-	-	-	600
				<u>18,530</u>
Which amount of \$18,530, deducted from the above sum of \$44,750, leaves applicable to other objects of the same nature, the sum of				26,220
Two or three other small expenditures may be set down as admitting specific and close estimate, viz:				
Two chimneys to east wing, being extra work already done, and which, in the opinion of the architect, should be allowed				
	-	-	-	400
Sodding ground near building, estimated at	-	-	-	100
				<u>500</u>
Deducting this total, viz	-	-	-	25,720
There still remains the sum of	-	-	-	<u>25,720</u>

Some of the matters to which attention is addressed as having claims upon this sum, are: the addition of other battlements to cloisters; of a clere

story to the museum; the substitution of flights of iron for wooden steps in the towers; other hot-air furnaces; registers for ventilation; gateways into the grounds; additional trees and shrubs; making roads and paths &c., &c., &c. These objects, some indispensable, others more or less urgent, all conducive to utility, permanence, beauty, or convenience, will be decided on by the committee under the authority with which they consider themselves intrusted, and as occasion shall arise, only after mature deliberation on careful estimates in detail, and in a spirit of strict economy. The committee, above all things, intend to keep an earnest regard upon the pecuniary limits set to their operations, and to allow no transgression thereof, either by actual expenditure, or by engagements, or pledges.

A few words remain to be added in explanation of the extra work and alterations of plan alluded to in the preceding statements: as to which it is due to the architect to premise that these have not been caused by any omissions in the specifications of the contract. One item is for *facing the areas with cut-stone*—the contract having provided a facing of good blue Potomac gneiss. The change was adopted because it was thought that a stone facing of the same material as the face of the superstructure would be more harmonious with, and conducive to, the general effect of the exterior of the structure.

2. *Battlements of cloisters*.—After the cloisters of the east wing were completed, it became evident to the architect that from the comparatively low situation of the building, the roofs were too conspicuous, and should be concealed by an appropriate battlement. He therefore advised, and the committee sanctioned, the expenditure of \$200 for the battlements of the eastern cloister. The committee has yet to act upon a like suggestion as to the western range.

3. *Two extra chimnies in the east wing* were added by the building committee after the plans were made, but before the contracts were signed. Mr. Cameron states that he was not aware of this addition, as it was made after he had completed his estimate; and the architect is therefore of opinion that his claim of extra compensation is just and equitable.

JOS. G. TOTTEN,
W. W. SEATON,
HENRY W. HILLIARD.

WASHINGTON, *December 31, 1848.*

APPENDIX A.

PROSPECTUS.

BIBLIOGRAPHIA AMERICANA:

A Bibliographical Account of the Sources of Early American History; comprising a description of books relating to America, printed prior to the year 1700, and of all books printed in America from 1543 to 1700, together with notices of many of the more important unpublished manuscripts.

Prepared by Henry Stevens, and published under the direction of the Smithsonian Institution at Washington.

PLAN OF THE WORK.

1. It will contain a descriptive list of all books relating to America, and of all books printed in America, prior to the year 1700, which may be found in the principal public and private libraries of Europe and America, or which are described in other works; together with notices of many of the more important unpublished manuscripts.

2. The descriptions will be made, as far as possible, from an examination of the books themselves. If any be taken from other sources of information they will be distinguished by some peculiar mark.

4. The titles, including the imprint or colophon, will in all cases be given in full, word for word, and letter for letter.

4. The *collation* of each book will be given; that is, such a description as will indicate a perfect copy.

5. The market value of the books, with the prices at which they have been sold at public sales, will, whenever possible, be given.

6. Different editions and various translations of the principal works will be diligently compared with each other, and their variations and relative merits pointed out, especially of such works as the Collections of Voyages and Travels by De Bry, Hulsius, Ramusius, Hakluyt, Purchas, Thevenot, etc.; the corresponding parts of which will be compared, not only with each other, but with the editions of the works from which they were translated, abridged, or reprinted.

7. Bibliographical notes will be appended when deemed necessary, containing abstracts of the contents of the works when the titles fail to give a proper idea of them; anecdotes of authors, printers, engravers, etc.; important items of historical and geographical information; notices of peculiarities of copies, as large paper, vellum, cancelled leaves, etc.; the number of copies printed; together with the comparative rarity and intrinsic value of the works.

8. The notes upon the books printed in America will comprise a full history of the origin and progress of printing in North and South America, from the year 1543 to 1700.

9. Under the title of every work will be designated one or more libraries in which it may be found.

10. The titles will be arranged alphabetically, under the names of the authors, or the leading word of the title.

11. The work will contain a full introductory memoir upon the materials of early American history, together with an account of the principal collections of them which have been made in Europe and America.

12. Three indexes to the contents of the work will be given, viz: 1. A chronological index, in which the titles will be arranged according to the years in which the works were printed; 2. An index of the subjects treated in the books; 3. An alphabetical index of the persons and subjects mentioned in the notes and introductory memoir.

PREPARATION OF THE WORK FOR THE PRESS.

1. The expense of preparing the work for the press will be defrayed by subscription.

2. It is estimated that the work will contain not less than five thousand titles, which are to be obtained from the public and private libraries of England, Ireland, Scotland, France, Germany, Denmark, Sweden, Holland, Belgium, Spain, Italy, America, etc. It is obvious that if any single individual possessed the requisite knowledge of languages and bibliography for this task, it would require of him several years of unremitting toil. In order, therefore, to accomplish the labor within a reasonable period, it will be necessary to employ upon it several persons. These should be learned and responsible men. Such men cannot be employed unless their services be well requited. Besides this, the whole work must be superintended and revised by Mr. Stevens himself; who, for this purpose, will be subjected to heavy travelling and other expenses. It is estimated that the necessary expenses attending the preparation of the work for the press, to say nothing of Mr. Stevens's own time and services, will amount to \$5,000 (or £1,000.) The work will not, therefore, be commenced until this sum is subscribed.

3. Any public institution or any individual possessing books of this class may join in the subscription on the following conditions, viz:

(1.) That all the books of this class, belonging to each subscriber be submitted to the inspection of Mr. Stevens, and all reasonable facilities and assistance be afforded him in his work.

(2.) That the name of the subscriber be indicated under the title of every book which he contributes, so that when the work is completed, it will show not only the treasures, but also the deficiencies in this department of the library of each subscriber, and enable him by marginal marks against the titles of books which he may subsequently procure, to preserve a perpetual record of his collection and of its deficiencies.

(3.) That each subscriber be entitled to contribute not only the title of every book of this class which he may possess at the time of subscribing, but also of all other books of this class, which he may procure for his own library previously to January, 1850, or before the work shall go to the press.

(4.) That the sum subscribed by each be in proportion to the number of titles contributed, or be such as Mr. Stevens may accept.

(5.) That this sum be paid to Mr. Stevens on the acceptance of the manuscript for publication by the Smithsonian Institution.

(6.) That each subscriber be entitled to receive from the Smithsonian Institution ten copies of the work for every \$500 (or £100) subscribed, and in the same proportion for a larger or smaller subscription.

4. Inasmuch as the library of the British Museum contains a larger number of this class of books than any other library in the world, and at the same time affords extraordinary facilities for bibliographical research, it is proposed to commence the work there. All the titles which this library can furnish will be written out upon cards, made for the purpose, measuring about eight inches by six. When these have been carefully revised and copied, they will, if it be desired, be sent in small parcels to each of the subscribers for their inspection and remarks. When the work is completed, so far as the library of the British Museum can furnish the materials, Mr. Stevens will himself visit each of the other libraries for which he shall have received subscriptions, comparing and revising the titles, and adding such other books as he may find, which had not been previously described.

5. It is hoped that sufficient force can be advantageously employed upon the work, to prepare it for the press in eighteen months.

Publication of the Work.

When the manuscript of the work shall have been completed, according to the plan detailed above, it is to be delivered to the Secretary of the Smithsonian Institution, at Washington, who will, in accordance with the rules of the institution as published in the *Programme of Organization*, of December 8, 1847, submit it to a commission of competent judges. If this commission report favorably as to the faithful execution of the work, it is to be published and distributed at the sole expense of the Smithsonian Institution, constituting one or more volumes of the quarto series of Smithsonian Contributions to Knowledge, similar in form and style of execution to the first volume, about to be published. It will be uniform with the quarto edition of the United States Exploring Expedition.

BOSTON, July 7, 1848.

GENTLEMEN: I beg leave to offer for your consideration the enclosed plan of a *Bibliographia Americana*, and to solicit for the enterprise the patronage and encouragement of the Smithsonian Institution.

I have the honor to be, gentlemen, your obedient and humble servant.

HENRY STEVENS.

Prof. JOSEPH HENRY,

Secretary of the Smithsonian Institution.

Prof. CHARLES C. JEWETT,

Librarian of the Smithsonian Institution.

SMITHSONIAN INSTITUTION,
Washington, July 17, 1848.

We highly approve of the foregoing plan of the *Bibliographia Americana*, submitted to us by Henry Stevens, esq., accompanying his note of July 7, 1848, and certify that the work will be accepted for publication in the *Smithsonian Contributions to Knowledge*, provided the execution is found satisfactory to a commission of competent judges, appointed by the Institution for its examination.

JOSEPH HENRY,
CHARLES C. JEWETT.

Letter addressed to several gentlemen.

SMITHSONIAN INSTITUTION, July 14, 1848.

MY DEAR SIR: Mr. Henry Stevens has submitted to me, as Secretary of the Smithsonian Institution, his proposition to prepare a bibliographical account of books relating to or printed in America prior to 1750, the details of which he informs me have been submitted to you. I beg leave to request an expression of your opinion as to the importance of such a work, and whether it would be of sufficient interest to the student of American history to warrant its publication in the series of volumes forming the *Smithsonian Contributions to Knowledge*.

My object in making this request is to satisfy myself as to the propriety of giving Mr. Stevens the necessary encouragement on the part of the Institution to commence the preparation of the work. In conformity with the rules adopted, it will not be accepted for publication by the Institution unless it be approved of as to character and execution by a commission of competent judges.

I remain respectfully and truly, yours,

JOSEPH HENRY,
Secretary Smithsonian Institution.

WASHINGTON, July 15, 1848.

DEAR SIR: You do me the honor in your note of yesterday's date to request my opinion respecting Mr. H. Stevens's plan of "a bibliographica account of books relating to, or printed in America prior to the year 1700."

Mr. Stevens has, as you understand, been so kind as to acquaint me with the details of his plan. I take great interest in its success. Executed in the manner in which it will be by Mr. Stevens, the work will, I conceive, constitute a contribution to our literature, of great value, and richly deserve a place in the series of volumes proposed to be issued by the Smithsonian Institution.

I have the honor to be, dear sir, with great respect and esteem, your obedient servant,

JOHN G. PALFREY.

Prof. J. HENRY.

WASHINGTON, *July 15, 1848.*

MY DEAR SIR: I have examined Mr. Stevens's plan for a *Bibliographia Americana*, and believe it to be an excellent one.

As an evidence of my belief in the importance of the work and of Mr. Stevens's qualifications for preparing it for the press, I may refer to the fact that I have subscribed two hundred and fifty dollars towards it upon the terms detailed in Mr. Stevens's prospectus.

Yours, very truly,

PETER FORCE.

Prof. JOSEPH HENRY,

Secretary of Smithsonian Institution.

CAMBRIDGE, *July 24, 1848.*

MY DEAR SIR: You ask my opinion of Mr. Stevens's plan of a bibliographical account of books relating to America, and of those printed in America prior to 1700. Having examined his plan, and from the nature of my studies having attended much to this subject, I cannot hesitate to express the belief that such a work completely and faithfully executed, would be a most important acquisition to our historical literature. He proposes not only to give the titles of the books, but to inspect every work, and to add bibliographical remarks to such as require illustrations of this kind, and moreover to indicate the principal libraries in which they may be found.

Many of these books are extremely rare, and are scattered in various libraries. I think it may be with safety affirmed, that not a single work on the first settlement and early history of any one of the old States has been written with the use of all the books relating to the subject; first, because in many cases, the authors did not know of the existence of the books; and secondly, because when they possessed this knowledge they had no means of ascertaining where the books could be found. Hence all the books relating to our early history, written in modern times, are more or less defective and erroneous, even where the authors have done their best to secure fullness and accuracy. It is easy to perceive what advantage these writers would have derived, and the public through them, from a work like the one proposed.

For use in libraries it will also be of great value, serving not only as a catalogue of all the books relating to America in any library, but likewise of all in which it is deficient, thereby enabling librarians to ascertain this deficiency at a single glance, and to supply it as occasions may arise.

If I may judge from my own experience, the want of such a book is more extensively felt than may at first be imagined. During the last few years I have had innumerable applications from persons making historical researches in various parts of the country, requesting me to point out materials and their sources.

Mr. Stevens possesses uncommon facilities for executing the task. He has been educated at one of our principal universities, and his employment in collecting and purchasing this class of books for the British Museum, and other libraries, has given him a practical knowledge essential to this undertaking, and which can scarcely be attained by any other individual, as the same combination of circumstances is not likely again to occur.

The sale of the work must necessarily be limited, and can not possibly pay the cost of preparing it for the press, or of its publication, and I think I am not deceived in the impression, that few works in the literary class are more worthy of the patronage of the Smithsonian Institution, or more in accordance with its original design.

I am, dear sir, with great respect and regard, very truly, yours,
JARED SPARKS.

JOSEPH HENRY, LL. D.,
Secretary of Smithsonian Institution.

SENATE U. S., *August 4, 1848.*

DEAR SIR: Mr. Stevens's prospectus of his *Bibliographia Americana* has been submitted to the Joint Committee on the Library. They approve his plan, and thinking it worthy of such encouragement as they can give, have subscribed two hundred and fifty dollars, on the terms mentioned in the prospectus, it being also understood that for this sum he will catalogue such books on America, in the Library of Congress, as are within the period proposed by him.

Very respectfully, your obedient servant,

J. A. PEARCE.

ANTIQUARIAN HALL,
Worcester, September 23, 1848.

DEAR SIR: I addressed a line to Mr. Stevens some weeks since, informing him that the council of the American Antiquarian Society would subscribe two hundred and fifty dollars towards the expense of preparing his *Bibliographia Americana*. Yesterday I received his acknowledgment, in which he expresses his satisfaction with the amount, and states that the work meets with every encouragement he could wish; the subscription having nearly reached the sum of five thousand dollars.

I presume this contribution by the council of the Antiquarian Society will be regarded as the best evidence of *their* estimate of the importance of the proposed work, and of their confidence in the manner of its execution under the patronage and supervision of the Smithsonian Institution.

Very respectfully and truly yours,

SAML. F. HAVEN.

Prof. Jos. HENRY.

APPENDIX B.

To the Regents of the Smithsonian Institution:

GENTLEMEN: The apparatus for the purpose of scientific illustration and investigation which I had been for many years accumulating while occupying the chair of chemistry in the University of Pennsylvania, on my retiring from that office was replaced by another apparatus belonging to my

successor. Under these circumstances, I signified my willingness to bestow mine on any institution for the promotion of science which would give it suitable apartments and cases, so as to have it kept in due order, and to render it available for the advancement of scientific knowledge.

Subsequently, Professor Henry, the distinguished Secretary of the Institution over which you are the legitimate guardians, suggested to me that I should offer my apparatus to that Institution in the following complimentary language: "I hope you will conclude to present it to the Smithsonian Institution. Several of the articles belong to the history of the science of our country, and would be interesting mementos of the past which should be preserved in some public institution." In reply, I wrote informing him that it would be agreeable to me to comply with his proposal, it being understood that the cost of the removal of the apparatus and of its being put in good order should be defrayed by the Institution, so that while, on the one hand, I should receive nothing, on the other, I should not be at any expense; also, that suitable apartments and cases should be provided for the keeping and using of the apparatus for the purpose of investigation and illustration.

Having been subsequently advised that you were willing to do me the honor of accepting the apparatus on these terms, I put it at the disposal of the Secretary, leaving it to his discretion to reject all that might not be considered of use to the Institution. I did not deem it proper that I should determine how far articles, which I had preserved under the idea of a contingent utility, might be worthy of the cost of transportation and of the space which they would occupy in the buildings of the Institution. I understand that Professor Henry gave to Mr. De Beust, for many years employed as my laboratory assistant, directions to pack up all that might, in his opinion, be useful in the way of research or illustration.

Agreeably to these directions, the apparatus was packed up last summer during my absence. I owe it to myself to state these circumstances, as it may happen that every body may not consider all the articles packed up by my assistant as meriting the honor done to them by their transfer to the halls of the Institution.

I am, gentlemen, very respectfully, your obedient servant,

ROBT. HARE..

WASHINGTON, January 3, 1848.

APPENDIX C.

Extracts from Communications from Professor Guyot to the Secretary of the Smithsonian Institution.

There is no man of science who does not deplore the want of uniformity in the scales of scientific instruments adopted by different civilized nations. The comparisons between the observations, made in different countries—comparisons indispensable in establishing the general results to which meteorology aspires—are at present impossible, except by means of reductions, which are a source of errors in calculation, (against which it is difficult to guard,) and which impose heavy labor and a considerable loss of time. It is therefore very desirable, for the interest of meteorology, that a uniform system of annotation should be established.

Of the three systems now in use for thermometric and barometric scales, (the Reaumur and the French inch, the Fahrenheit and the English inch, and the centigrade with the millimetre,) that to which preference is generally given on the continent of Europe, is the centigrade and the metric system. Germany is gradually abandoning the Reaumur division and the French inch for the centigrade and the millimetre. In some of its most important scientific works, as the Meteorology of Kaemtz, several memoirs of Dove, the Physical Atlas of Berghaus, and the accompanying text the latter have been adopted. By degrees, Italy is doing the same, and we shall soon have for choice only the Fahrenheit and the English inch on one hand, and the centigrade and the millimetre on the other.

But to which of these two systems ought we to give the preference? I do not hesitate to say, to the second. It is the most rational and the most convenient, it is that which has the greatest chance of uniting all suffrages and of becoming universal. But it is reserved to America to settle this question. Her weight in the balance will be decisive. If, renouncing the system she has inherited from England, she adopts the centigrade and metric scales, the scientific world may hope soon to arrive at that uniformity in measures so desirable. England would not be able to hold out long alone.

It would be worthy of the Smithsonian Institution, which owes its origin to a love of science transcending all spirit of nationality, to take here the initiative, which its position, so perfectly independent, permits. The adoption of these scales for the numerous instruments, which it intends to spread over the whole surface of the United States, together with the regular publication of observations under this form, will soon compel all observers to conform to it. I am not ignorant of the objections which might be urged against this measure, nor do I undervalue them. Nevertheless, I believe that I should be able to meet them, and I would do so in advance, did I not fear to extend this communication beyond suitable limits.

The co-operation of Professor Bache would be of very great importance. As superintendent of the coast survey, he has a number of publications to make on the temperature of the sea at different depths, for example, and others, for which it would be useful to adopt the centigrade scale, or at least to place the centigrade opposite to the Fahrenheit degrees. This scientific authority, joined to that of the Smithsonian Institution would, I doubt not, be sufficient to introduce gradually so desirable a reform. The moment is critical—later, a change would be almost impossible.

* * * * *

The importance which the subject of the change of scales seems to me to possess, and the exigency of the moment, induce me to offer some further considerations thereon, for which I crave your indulgence.

Uniformity of notation in all scientific works is the essential and immediate result at which we should aim. We might, strictly speaking, admit any scale, provided it were universally adopted; but since, among the number of those which have been proposed, there are three which have divided the suffrages, it is from among these that we should select. Other things being equal, two reasons (as I have already remarked) it seems to me should determine our choice; the first is the relative perfection of the scale; the second is the probability of its adoption by all men of science.

As to the first point, the centigrade scale has the advantage over the

two others of being in harmony with the decimal system, and of facilitating calculations. It has the advantage over the Fahrenheit of possessing a natural zero, a point of departure fixed by nature herself, easy to determine, and which corresponds to a point of temperature so critical, that from the moment of reaching it, meteorological phenomena are suddenly and profoundly modified, vegetation ceases, and all nature assumes another aspect. It is then highly proper that this temperature, which is a point of change marked by nature herself, be also the principal one on the thermometric scale.

The English adduce, as one of the reasons which causes them to retain the Fahrenheit scale, the absence of negative quantities. This, it is true, is an advantage; for I admit that the mixing of negative and positive quantities is a source of error, and embarrasses the calculation. But this advantage, which is real, disappears the moment we wish to make a universal one of the Fahrenheit scale, for in nearly half the countries of the earth, and particularly in North America, the Fahrenheit thermometer furnishes every year many negative quantities. It has been said further, that the Fahrenheit degree, measuring a smaller difference of temperature, allows of a more exact reading than the centigrade. But it is only requisite to mark half degrees upon the centigrade scale in order to obtain, the tubes being equal, a still greater approximation, that is to say, according to the ordinary method of estimation of twentieths of degrees; which is much more than it is right to demand of instruments destined for meteorological observations, since various causes prevent, even with the best, that one could guarantee the temperature of the air within two or three tenths of a degree.

But the strongest reasons for the adoption of the centigrade scale are, without contradiction, the predominance already secured to it in the greater part of the scientific world, the considerable amount of meteorological labors in which it is employed, and the decided tendency continually to extend itself. America has not here to open a new path, she has only to associate herself with the movement which is carrying scientific Europe along with it. But I repeat, her influence will be decisive, she holds in her hands the future, and if she well understands her part, here as in other domains, she should break with the past in its narrowness, and render herself cosmopolitan in the interest of general utility.

What I have just said applies equally to the barometric scale. The metric scale is the most convenient; it is rational, easy to verify, invariable; it has also the future in its favor.

There remain to be considered material difficulties which attend every change of system. I will take the liberty of calling your attention to the fact that they only concern other institutions. The Smithsonian Institution is perfectly free to take the course which may seem to it most in accordance with the interests of meteorology. It has, moreover, a right here to an influence proportioned to its expenditures in this department. If, for example, it takes upon itself the gratuitous publication of the observations made in stations already existing, may it not in time claim to regulate also the form of these observations.

Besides, the question is not about changing at once the habits of the people, but simply those of scientific observers, which is a very different affair. The detailed publication of the observations will principally circulate in the scientific world for which it is designed. But nothing would pre-

vent the publication, for some time to come, of reports of general results, with the old scales opposite the new.

I am, sir, your very obedient servant,

A. GUYOT,

JOSEPH HENRY, LL. D.,

Secretary of the Smithsonian Institution.

FOURTH ANNUAL REPORT

OF THE

BOARD OF REGENTS

OF

THE SMITHSONIAN INSTITUTION,

TO

THE SENATE AND HOUSE OF REPRESENTATIVES,

SHOWING

THE OPERATIONS, EXPENDITURES, AND CONDITION OF THE INSTITUTION

DURING THE YEAR 1849.

JULY 29, 1850.

Read.

JULY 30, 1850.

Ordered to be printed, and that 5,000 additional copies be printed without the appendix, 500 of which are for the Smithsonian Institution.

WASHINGTON :

PRINTED BY THE PRINTERS TO THE SENATE.

1850.

SMITHSONIAN INSTITUTION,
July 26, 1850.

Sir: I have the honor herewith to transmit to you the annual report of the Board of Regents of the Smithsonian Institution, and beg leave to request that you will present the same to the Senate of the United States.

I am, very respectfully, your obedient servant,

JOSEPH HENRY,
Secretary S. I.

HON. WILLIAM R. KING,
President United States Senate.

OFFICERS, &c. OF THE SMITHSONIAN INSTITUTION.

ZACHARY TAYLOR,
Ex officio Presiding Officer of the Institution.

MILLARD FILLMORE,
*Ex officio second Presiding Officer of the Institution,
 and, by election, Chancellor of the same.*

JOSEPH HENRY,
Secretary of the Institution.

CHARLES C. JEWETT,
Assistant Secretary, acting as Librarian.

EDWARD FOREMAN,
Assistant.

WILLIAM W. SEATON, }
 ALEX'R D. BACHE, } *Executive Committee.*
 JAMES A. PEARCE, }

JEFFERSON DAVIS, }
 WILLIAM W. SEATON, } *Building Committee.*
 HENRY W. HILLIARD, }

JAMES RENWICK, Jr., *Architect.*

GILBERT CAMERON, *Contractor.*

LIST OF REGENTS OF THE INSTITUTION.

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Vice President of the United States.

ROGER B. TANEY,
Chief Justice of the United States.

WILLIAM W. SEATON,
Mayor of the city of Washington.

JAMES A. PEARCE,
Member of the Senate of the United States.

JEFFERSON DAVIS,
Member of the Senate of the United States.

JAMES M. MASON,
Member of the Senate of the United States.

HENRY W. HILLIARD,
Member of the House of Representatives.

GRAHAM N. FITCH,
Member of the House of Representatives.

WILLIAM F. COLCOCK,
Member of the House of Representatives.

RUFUS CHOATE,
Citizen of Massachusetts.

GIDEON HAWLEY,
Citizen of New York.

WILLIAM C. PRESTON,
Citizen of South Carolina.

RICHARD RUSH,
Citizen of Pennsylvania.

ALEXANDER D. BACHE,
Member of Nat. Inst., Washington.

JOSEPH G. TOTTEN,
Member of Nat. Inst., Washington.

MEMBERS EX-OFFICIO OF THE INSTITUTION.

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President of the United States.

MILLARD FILLMORE,
Vice President of the United States.

JOHN M. CLAYTON,
Secretary of State.

WILLIAM M. MEREDITH,
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GEORGE W. CRAWFORD,
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WILLIAM B. PRESTON,
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JACOB COLLAMER,
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REVERDY JOHNSON,
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Chief Justice of the United States.

THOMAS EWBANK,
Commissioner of Patents.

WILLIAM W. SEATON,
Mayor of the city of Washington.

HONORARY MEMBERS.

ROBERT HARE,

BENJAMIN SILLIMAN,

*ALBERT GALLATIN,

WASHINGTON IRVING.

FOURTH ANNUAL REPORT
OF
THE BOARD OF REGENTS
OF
THE SMITHSONIAN INSTITUTION,
SHOWING

The operations, expenditures, and condition of the Institution up to January 1, 1850.

To the Senate and House of Representatives:

In obedience to the act of Congress of August 10, 1846, establishing the Smithsonian Institution, the undersigned, in behalf of the Regents, submit to Congress, as a report of the operations, expenditures, and condition of the institution, the following documents:

First. Annual report of the Secretary, giving an account of the operations of the institution during the year 1849, accompanied by a report from the Assistant Secretary, relative to the library, and by other documents.

Second. Report of the Executive Committee, exhibiting an account of the expenditures of the institution during the year, and of its financial condition on the first of January, 1850.

Third. Report of the Building Committee, relative to the progress made in 1849 in the erection of the Smithsonian edifice, and in the improvement of the grounds, with a statement of the expenditures which have thus far been made on the same.

Fourth. Proceedings of the Board of Regents at their fourth annual session.

Fifth. Proceedings of the first meeting of the establishment.

Sixth. Appendix.

From these documents it will be seen that the Smithsonian Institution has been gradually extending its sphere of usefulness in carrying out the plan of its organization.

An accident which happened to one of the apartments of the building, as will be seen from the proceedings of the board, has induced the Regents to change the original plan of finishing the interior, and to adopt in its stead a system of fireproofing, better adapted to security and permanence. This will be attended with an additional expense, which it is proposed to meet by an extension of the time of completing the building.

From the report of the Executive Committee it will be perceived that the funds of the institution are in a very favorable condition, and from the proceedings of the Regents that the Secretary has been directed to make application to Congress for permission to increase the principal of the Smithsonian fund, by adding thereto \$150,000 of accrued

interest now on hand, and such other sums as may hereafter come into the possession of the Regents, by donation or otherwise, until the sums so added to the original bequest shall amount to \$200,000.

The presentation of this report to Congress has been delayed beyond the usual time, on account of the continued session of the board, rendered necessary by the protracted investigations relative to the building.

MILLARD FILLMORE,
Chancellor, &c.
JOSEPH HENRY,
Secretary.

ANNUAL REPORT OF THE SECRETARY.

To the Board of Regents of the Smithsonian Institution:

GENTLEMEN: In accordance with the resolution that the Secretary shall present at each annual meeting of the Board of Regents an account of the operations of the institution during the past year, I respectfully submit the following:

Agreeably to the scheme of finance adopted by the board, the greater portion of all the income of the Smithsonian fund is at present devoted to the erection of the building; and until this is paid for, the money which can be appropriated to the active operations of the institution will be comparatively small; not only small in proportion to the demands made upon it, but small in reference to the results which the public generally expect it to produce. It is believed, however, that a proper consideration of the facts presented in the following report will warrant the conclusion, that the institution, during the past year, has been gradually extending its sphere of usefulness, and successfully bringing into operation the different parts of its plan of organization.

It will be recollected that the several propositions of the programme were adopted provisionally, and it is gratifying to be able to state that experience thus far has indicated no important changes. The general plan has continued to receive the approbation of the enlightened public both in this country and in Europe, and to increase general confidence in the power of the institution to confer important benefits on our country and the world.

In presenting the different operations of the institution, I shall adopt, as in my last report, the principal divisions of the programme:

1st. Publication of memoirs in quarto volumes, consisting of positive additions to knowledge.

2d. Institution of original researches, under the direction of competent persons.

3d. The publication of a series of reports, giving the present state and progress of different branches of knowledge.

4th. Formation of a library and museum of objects of nature and art.

5th. Lectures.

Publication of Memoirs.

Agreeably to the plan of the institution, these memoirs are intended to embody the results of researches which could not otherwise be readily published, and are to be distributed to societies, public libraries, and other

institutions. An account of the first memoir was given in the last report. It relates to the ancient monuments of the Mississippi valley, and occupies an entire volume. It has been presented, as far as opportunity would permit, to the principal literary and scientific societies of the world, to all the colleges and larger libraries of this country, and has everywhere been received with much commendation. All the societies from which we have as yet heard, have declared their willingness to co-operate with the institution, and to give us their publications in exchange, from which source our library has already been enriched with valuable additions.

It is to be regretted that our means would not permit us to distribute the first volume more liberally than we have done, and that the price put upon the copies offered for sale has placed them beyond the reach of many persons desirous of obtaining them. This arose from the fact that in order to remunerate the authors for the expense and labor bestowed on the memoir, they were allowed to strike off from the types and plates of the institution an edition to be sold for their own benefit. To avoid risk of loss, the edition was a small one, and the price put at ten dollars. An occurrence of this kind will not happen again; for, although it would be desirable to pay authors for their contributions, yet it is now found that materials will be offered, free of all cost, more than sufficient to exhaust the portion of the income which can be devoted to publications.

In printing the future volumes it will be advisable to strike off an extra number of copies for sale on account of the institution, and to dispose of these for little more than the mere cost of press-work and paper.

The second volume of Contributions is now in the press, and will consist of a number of memoirs which have been submitted to competent judges and found worthy of a place in the Smithsonian publications. In this volume we have adopted the plan of printing each memoir with a separate title and paging. The object of this is to enable us to distribute extra copies of each memoir separately, and also to furnish the author with a number of copies regularly paged for his own use. It will also enable us to classify the memoirs according to subjects.

The following is a brief account of the memoirs contained in the second volume, so far as they have been reported on by the commissioners to whom they have been submitted:

1. *A Memoir on the planet Neptune, by Sears C. Walker*—An abstract of this memoir has been published in the proceedings of the American Philosophical Society, and has received the approbation of the scientific world. It presents the several steps of the discovery of an orbit which has enabled Mr. Walker to compute the place of the new planet with as much precision as that of any of the planets which have been known from the earliest times.* Starting from the observations of the motion of the planet during a period of about four months, Mr. Walker calculated an empirical orbit which enabled him to trace its path among the stars of the celestial vault through its whole revolution of 166 years. He was thus enabled to carry its position backward until it fell among a cluster of stars accurately mapped by Lalande towards the close of the last century, and, after a minute and critical investigation, he was led to conclude

* It is proper to state that a part of the researches given in this memoir was made during the author's connexion with the National Observatory, under the direction of Lieutenant Maury. An account of these will probably soon be published in the next volume of the records of operations of this observatory.

that one of the stars observed by Lalande on the night of May 10, 1795, was the planet Neptune. This conclusion was rendered almost certainly by the observation, made on the first clear night, that all the stars in the cluster above mentioned were found in place, except the one previously fixed upon as the new planet. Some doubt was created, however, by noting that the missing star in Lalande's maps was marked as doubtful. In order to settle this difficulty, the original manuscript of the astronomer deposited in the observatory of Paris was referred to. It was then found that Lalande had twice observed the same star; and not finding the right ascension and declination each time the same, and not dreaming it was a planet, he selected one of the observations for publication, marking the position indicated doubtful. The planet had moved during the interval of observation, and thus produced the discrepancy. By allowing for the movement during the time elapsed, the two observations precisely agree. There could, therefore, be no longer any doubt that this star, observed and mapped fifty years ago as a fixed star, was in reality the planet Neptune. Mr. Walker, availing himself of this discovery, had now a series of observations embracing not a few months of the motion of the planet, but which carried it back fifty years. From these data he was enabled to deduce a pure elliptical orbit, or one which the body would describe were there no other planets in the system. This orbit has been investigated by another of our countrymen in a series of profound and beautiful researches, adding much to our knowledge both of Neptune and Uranus. I allude to the labors of Professor Peirce, of Cambridge.

It is well known that the planet Neptune was discovered by mathematical deductions from the perturbations observed in Uranus, and that Leverrier and Adams, the independent authors of this discovery, not only pointed out the direction in which the unseen planet was to be found, but also, from *a priori* considerations, gave the dimensions, form, and position of the orbit it describes around the sun. The direction indicated was the true one, but the elements of the orbit were widely different from those subsequently found to belong to the actual orbit of the planet. Professor Peirce submitted the data used by Leverrier and Adams to a new and critical examination, and succeeded in discovering the cause of their error, and of verifying the conclusions of Mr. Walker. He afterwards proceeded to consider the inverse problem, viz: that of deducing the perturbations which Neptune ought to produce in the planet Uranus. His final results gave a perfect explanation of all the anomalies in the motions of Uranus, and furnished the data, for the first time since its discovery in 1781, for correct tables for determining its position in the heavens. Professor Peirce also investigated the action of all the other planets on Neptune, and his results enabled Mr. Walker, by applying them to his elliptical orbit, to compare the actual with the calculated place of the planet. This led to a further correction of the elliptical orbit, and a more perfect table of calculated places. In this way, by a series of profound and beautiful investigations, alternately combining the data of observation with theoretical considerations, these two astronomers have perfected our knowledge of the motion of the most distant planets of our system, and furnished the means of giving their past and future position through all time. The details of Mr. Peirce's paper have not yet been prepared for the press. They will probably be given in due time to the world as a part of the Smithsonian Contributions.

The investigations mentioned in the foregoing account have been attended with very laborious arithmetical calculations. A small appropriation has been made to defray, in part, the expense of these. Indeed, without the aid thus given, the discoveries we have related would scarcely have been made—at least at this time, and in our country.

2. The next memoir is *an account of the discovery of a comet by Miss Maria Mitchell, of Nantucket*, with its approximate orbit, calculated by herself. The honor of this discovery has been duly awarded to the author. A medal has been presented to her by the King of Denmark, and the comet itself is now known to astronomers in every part of the world by her name. From the peculiarities of the case, the Executive Committee recommended that a small premium be presented to Miss Mitchell.

3. The third memoir is *on a new method of solving cubic equations, by Professor Strong, of New Brunswick, New Jersey*; a purely mathematical paper, which has been pronounced an interesting addition to that branch of science.

4. The fourth memoir is *a contribution to the physical geography of the United States*. It presents a section, from actual surveys, of the descent of the bed of the Ohio river from its source, in the State of New York, to its mouth, on the Mississippi. By a series of observations and elaborate calculations, the author exhibits the amount of water which passed down the river during a period of eleven years prior to 1819. This, compared with the amount of rain which fell during the same time on the surface drained by the river, gives a series of interesting results in reference to evaporation.

It also contains a proposition for improving the navigation of the Ohio, founded upon data given in the preceding part of the memoir. Whatever may be the result of the plan here proposed, this memoir has been recommended for publication as a valuable addition to the physical geography of the United States. The author is Charles Ellet, jr., the celebrated engineer of the wire bridges over the Niagara and Ohio rivers. Another memoir is promised by the same author, which will be a continuation of the same subject.

5. The fifth memoir is contributed by Dr. Robert Hare, of Philadelphia, and is intended to elucidate the remarkable phenomenon exhibited at the great fire in the city of New York on the 19th of July, 1845, during which two hundred and thirty houses were destroyed, containing merchandise amounting in value to sixty-two millions of dollars. "A series of detonations, successively increasing in loudness, were followed by a final explosion which tore in pieces the building in which it took place, threw down several houses in its vicinity, and forced in the fronts of the houses on the opposite side of the street." These effects were attributed to gunpowder, though the owner of the building in which the explosion occurred declared that none of this article was present, but that the house contained a large quantity of nitre, in connexion with merchandise of a combustible nature.

This memoir contains a series of investigations relative to the explosions which may be produced by heated nitre in connexion with carbonaceous matters. The author shows, by numerous experiments, that explosions of a violent kind can be produced by forcibly bringing into contact at a high temperature, nitre, and substances of an inflammable character. It also contains several new experiments on the combustion of gunpowder under different circumstances.

6. The sixth memoir is on *the ancient monuments of the State of New York*, by E. G. Squier, and may be regarded as a continuation of the memoir by Squier and Davis on the ancient monuments of the Mississippi valley. The expense of the explorations which form the basis of this memoir was two hundred dollars, one half of which was defrayed by the members of the Historical Society of New York, and the remainder by this institution.

7. Another memoir is by Professor Secchi, a young Italian of much ingenuity and learning, a member of Georgetown College. It consists of a new mathematical investigation of the reciprocal action of two galvanic currents on each other, and of the action of a current on the pole of a magnet. It begins with the assumption that the force between the elements of the currents and the magnet is inversely as the square of the distance, and directly as the sine of the inclination, and then presents the mathematical inferences which legitimately flow from these data. The deductions are of such a nature that the author has been able to verify them by means of well devised experiments, and the results accord as nearly with the deductions as the complex nature of the subject will admit. The investigations involve the mathematical theory of the galvanometer, and the experiments furnish much interesting and useful information, aside from the principal object of the memoir, particularly on the comparative value of different kinds of batteries.

8. The next paper is by Professor Louis Agassiz, of Harvard University, and is entitled *The Classification of Insects upon Embryological Data*. It gives an account of a series of new and interesting facts observed by the author relative to the metamorphosis of insects, which have an important bearing on general questions in zoology, and which will probably lead to the arrangement of these animals according to a new system of classification, founded upon more definite principles than those heretofore adopted.

9. The next is a memoir by Dr. R. W. Gibbs, on the *Mesa-aurus* and some new allied genera of the gigantic lizards which formerly inhabited our planet, and of which the remains are now found in different parts of the United States, particularly in the marl beds of various parts of the country. This is an interesting addition to paleontology, and has received a favorable report from the commission to whom it was referred.

Researches.

The programme of organization contemplates the establishment of researches, under the direction of suitable persons, the expense to be borne in whole or in part by the institution. In the last report it was mentioned that a telescope and other apparatus had been ordered for Lieutenant Gilliss in his astronomical expedition to Chili, and that, without this assistance, the expedition would have been delayed a year. I am now, however, happy to state that the expense of these instruments has since been paid by an appropriation of Congress; and the institution has thus been the means of promoting the objects of the expedition without any expenditure of its income. Certain improvements in astronomical instruments, however, have been made since the departure of Lieutenant Gilliss which would much facilitate his observations, and enable him to do much more with his small number of assistants, and it may be well for the institution to furnish him with instruments of this kind.

Under the head of researches it may also be mentioned that, during the

past year, we have caused to be computed, at the expense of the institution, an ephemeris of Neptune, giving the position of the planet in the heavens from August 4, 1846, to February 4, 1848, and also in the last half years of 1848 and 1849. This ephemeris is based on the orbit of Neptune established by Mr. Walker and corrected by the perturbations of the planet Neptune by the action of Jupiter, Saturn, and Uranus, as deduced from the mathematical investigations of Professor Peirce, of Harvard University.

We have distributed copies of this ephemeris to all persons known to us who are interested in practical astronomy, not only in this country but in Europe. It has been received with high commendation, and is found to give the actual place of the planet in the heavens within the limits of a few tenths of a second of arc; indeed, the coincidence of the calculated and observed places is so marked, that, were the actual planet of the heavens and that of the ephemeris to be considered as a double star, they would have so close a proximity that no telescope yet constructed could separate them.

Occultations for 1850.

A set of tables in continuation of those mentioned in the last and preceding report for facilitating the calculation of the appearance of occultations of fixed stars by the moon during the year 1850 has been prepared by Mr. Downes, of Philadelphia, and published by the institution. At the last session of Congress an appropriation was made for establishing a Nautical Almanac, which will furnish, among other aids to astronomical observation, sets of tables of the kind just mentioned. Lieut. Davis, of the United States navy, to whom the superintendence of this national work has been intrusted, recommended that the expense of the preparation of the tables for 1850 should be defrayed from the appropriation for the almanac; and this recommendation has been concurred in by the Secretary of the Navy. The institution has, therefore, been called upon merely to pay for the printing and distribution of the tables, and thus again enabled, with a small outlay of its funds, to afford important facilities for the advance of science.

Meteorology.

Under the general head of researches we may also give an account of the progress made in establishing the system of meteorological observations proposed in the preceding reports. Circulars describing the plan of operation were distributed to the several parts of the Union through members of Congress at the last session, and the results fully equalled our anticipations. From localities widely separated from each other, and distributed over the greater portion of the United States, about one hundred and fifty monthly returns are now regularly received. To carry on this system efficiently, much labor is necessarily required in the way of correspondence; but it bids fair to furnish the institution with a wide field of usefulness in bringing it into communication with individuals who, though secluded in position, are desirous of improving themselves, as well as of promoting general knowledge. The correspondence we have

thus established, and which we hope to extend, through the aid of the members of the present Congress, will enable us to acquire definite information on a variety of subjects besides those which relate to meteorology. We have already accumulated in this way a mass of curious and instructive information relative to various subjects, which we hope, in the progress of the development of the plan of the institution, to digest and present to the public.

We would mention in this connexion that two of our meteorological correspondents have proposed the collection of statistics of diseases, including the rise, progress, and decline of epidemics. This is a subject we would commend to the American Medical Association. The Smithsonian Institution could assist in an enterprise of this kind by receiving the information which is attainable, and collating it, under the direction of a committee of gentlemen belonging to the medical profession.

It will be recollected that our plan of meteorological observations embraces three classes of observers—one to record the changes in the aspect of the sky, the direction of the wind, beginning and ending of rain, snow, &c.; another, in addition, to give an account of the changes of temperature indicated by the thermometer; and a third, furnished with a full set of instruments for recording the most important atmospheric changes. The importance of the information which may be derived from a careful record of the weather without instruments can scarcely be realized by persons who have given but little attention to the subject. The place of origin, direction, velocity of motion of a storm, as well as the direction and velocity of the wind which composes it, whether gyratory or inward and upward, may all be determined by a sufficient amount of data of the kind we have mentioned. Also, a careful record of the observations of meteors seen by individuals from different positions would furnish interesting data for determining the elevation and velocity of these mysterious visitors.

There are other data which can only be obtained by the use of accurate instruments: fortunately, however, a comparatively small number of observers are sufficient for determining these. The instruments should be of the best possible construction, placed in important situations, observed at suitable times and with undeviating regularity by competent observers. Few persons are acquainted with the difficulty of procuring accurate meteorological instruments. The ordinary thermometers for sale in the shops frequently differ several degrees from each other, particularly at the higher and the lower temperatures, and even the same thermometer is liable, for a time after its construction, to undergo a change in the size of the bulb, and thus to derange the accuracy of the scale. An accurate barometer is another instrument which cannot readily be obtained, unless at too great a price for the means of ordinary observers. The common weather glasses, sold under the name of barometers, though they may be of use in indicating variations of atmospheric pressure, and thus assist in furnishing data for determining the progress of aerial waves, are inapplicable to the precise and accurate observations necessary to determine the minute changes of atmospheric pressure, or of ascertaining the height of places above the level of the sea.

Considerable pains have been taken during the past year to ascertain the best form of a barometer, which could be procured at a reasonable

cost, and, after considerable inquiry and comparison of different instruments, we have at length decided upon one, with an adjustable cistern and enclosed in a brass case, which may be transported to a distance, and will serve as well for a mountain barometer as for indicating meteorological changes. For the construction of these instruments, we have employed Mr. James Green, formerly of Baltimore, now of New York; and in order that the instruments furnished by him to ourselves, or sold to our observers, may be comparable with each other, we have procured a standard barometer from London, with which each instrument, previously numbered, is accurately compared, and the record carefully preserved. We have also decided upon the forms of rain and snow gauges and wind vanes, and have ordered a number of these to be constructed by Benjamin Pike & Son, Broadway, New York.

It is the policy of the institution to do as much with its funds as possible, and to call in aid from every quarter whence it may be obtained. With reference to the system of meteorology, I am happy to inform the board that we have received assistance from a number of sources from which it could scarcely have been expected at the commencement of the scheme. The last Congress appropriated two thousand dollars for meteorology, to be expended under the direction of the Navy Department. It was understood that Professor Espy was to be engaged in the investigations to be made in accordance with this appropriation, and, in order that his labors might co-operate with those of the institution, the late Secretary of the Navy directed him to apply to me for instructions. During the past year he has been engaged in directing observations and making preparation for a series of experiments having an important bearing on the explanation of meteorological phenomena. It is understood that the remainder of this appropriation, after paying the salary of Mr. Espy, will be expended in defraying incidental expenses, such as printing, engraving, &c.

The Regents of the University of the State of New York, in 1825, organized a system of meteorology, which has continued ever since, and which has added many interesting facts to the stock of scientific knowledge. In order to extend the usefulness of this system, the Regents of the University have lately resolved to reorganize the whole, and to supply the observers with accurate and well-compared instruments. This work has been intrusted to Dr. T. Romeyn Beck and one of our Regents, Gideon Hawley, esq., both of Albany. They have adopted the same system and instruments as those of the Smithsonian Institution, and have agreed to co-operate fully with us in the observation of the general and particular phenomena of meteorology. A similar movement has been made in the legislature of Massachusetts for the establishment of a system of observations, and it is hoped that the other States of the Union will follow these examples. We are also happy to state that the medical department of the army, under the direction of Surgeon General Lawson, has signified its willingness to unite with us in the same system, and to furnish the new military posts with instruments constructed on the same plan, and compared with the Smithsonian standard. We hope, therefore, within the coming year, that there will be established at least fifty stations in different parts of North America, furnished with accurate instruments of this kind.

During the past summer I visited Canada, principally for the purpose

of examining the meteorological instruments and the method of using them employed at the observatory of Toronto. Captain Lefroy, the director of this institution, afforded me every facility for acquiring the desired information. He also furnished me with a list of military posts in Canada at which observations may be made, and gave assurance of the hearty co-operation in our labors of the officers attached to these posts. We have also a prospect of procuring permanent observations from Bermuda, some of the West India islands, and from Central America.

From all these statements it will be seen we are in a fair way of establishing a general system of meteorology, extending over a great portion of North America, including many stations furnished with compared instruments referred to the same standard. When fully organized, it will constitute one of the most important systems ever instituted; but to bring it fully into operation will require a judicious expenditure of all the funds at our disposal for this purpose. At the last session of the board, one thousand dollars were appropriated for meteorological purposes, the greater portion of which has been expended for instruments, among which are those to serve as standards; an equal sum, at least, will be required for the next year.

In connexion with the regular meteorological system, successful applications have been made to the presidents of a number of telegraph lines to allow us, at a certain period of the day, the use of their wires for the transmission of meteorological intelligence. We propose to furnish the most important offices along the lines with sets of instruments, and to give the operators special instructions for the observation of particular phenomena. It is hoped by this means to obtain results not otherwise accessible. Instruments for this purpose are now in process of construction, and as soon as they are completed the transmission of observations will commence.

The establishment of the extended system of meteorology, which we have just described, is a work of time and labor—the correspondence alone being sufficient constantly to occupy the time of one person, and the adjustment of the several parts of the plan has required more time than my other engagements would permit me to devote to it.

Magnetic Observations.

A set of magnetic apparatus was ordered from London for the purpose of determining the lines of magnetic intensity, declination, and inclination. These are intrusted to Colonel Emory, of the boundary commission, and in his possession they will probably be made to do good service in the cause of science. As soon as the funds will admit of the appropriation, it would be advisable to purchase several sets of instruments of the same kind, to be placed in the hands of the scientific explorers of our new territories, and for determining the principal magnetic lines across the United States.

Physical Geography.

Another subject of much interest connected with the physical geography of our country is the collection of the statistics of all railway and canal explorations which have been made in various parts of the United States and Canada. This information, at present in the possession of indi-

viduals, is of little value, and, unless collected by some public institution, will soon be lost to the world. Surveys of this kind furnish the most exact data for the determination of what may be called the mountain bases, or general water sheds of the surface; and no portion of the world of the same extent has been so thoroughly traversed with these explorations as the United States. Connected with these, sketches should be made of the principal mountain ranges, barometrical measurements of the higher peaks, with geological sections of the strata through which the public works are carried. For the purpose of commencing this collection, we have addressed letters to all persons within our knowledge who possess information of this kind, requesting memoirs from them containing results of their own measurements and observations. By this means we hope to present a series of papers of the same character as that of Mr. Ellet, and thus furnish materials for a more accurate physical map of North America, as well as the means, in connexion with our operations in meteorology, for a more exact study of our climate.

During the past year Professor Guyot has made a barometrical exploration of the mountain system of New Hampshire, and he purposes to devote a portion of each year to investigations of this kind.

Natural History.

Our new possessions in Oregon, California, and Mexico offer interesting fields for scientific inquiry, particularly in the line of natural history, and Dr. Gray, of Cambridge, and Dr. Engelman, of St. Louis, aided by several scientific gentlemen, interested in this branch of science, have sent a number of collectors to develop the resources of these regions, particularly so far as the botany is concerned.

Among these, Mr. Charles Wright has been engaged to make explorations during the past year in New Mexico, at the expense of a subscription by individuals and institutions. He has just returned laden with a valuable collection of plants, seeds, &c., which are to be divided among those who defrayed the expense. In behalf of the Smithsonian Institution \$150 was subscribed towards this enterprise, and for this we are entitled to a full set of all the objects collected. These are to be submitted to Dr. Gray, of Cambridge, to be described in a memoir by him, and to be published in the Smithsonian Contributions. Mr. Wright is expected to start on another expedition early in the spring, for the purpose of making explorations in natural history in the regions around El Paso, and it will be well for the Smithsonian Institution to further assist this laudable enterprise with another subscription of an equal amount.

We have also purchased, for the sum of £20, a set of the plants collected by Mr. Fendler in the vicinity of Santa Fe, during the year 1847. This adventurous explorer, under the direction of the gentlemen previously mentioned, is now engaged in investigating the botany of the great valley of the Salt Lake; and it is proposed further to assist him by the purchase of a set of the collections he may obtain. By co-operating in this way with individuals and institutions, we are enabled, at a small expense, materially to advance the cause of science.

Ancient Monuments.

Another object, the prosecution of which falls particularly within the province of the institution, is that of obtaining descriptions of the ancient monuments of North America. Circulars have been sent to gentlemen in various parts of the country, requesting them to furnish surveys and explorations of mounds, and other ancient works, which are reputed to exist in their vicinity. To facilitate these investigations, we have requested the authors of the first volume to draw up, from the results of their experience, a set of instructions for the proper examination and description of works of this kind. The same subject has also been placed before several historical societies, established in places where mounds are known to exist. In connexion with this subject, we cannot too highly commend the policy of the new Territory of Minnesota, which, among the first of its acts, has established a Historical Society, to gather up the record of events as they occur, and thus to preserve the unappreciated facts of the present—destined to become history in the future. An important and interesting part of the labors of such societies would be the survey and exploration of the ancient monuments which might be found in their vicinity. Brief accounts of these might be published in the proceedings of the societies, while detailed descriptions and drawings could be given to the world at the expense and through the transactions of the Smithsonian Institution.

The publication of our first volume has awakened a lively interest in this subject, and we have received accounts of various locations of mounds and other ancient works in different parts of the country which were previously unknown. A gentleman, well qualified for the task, is now engaged in preparing for us an ethnological chart indicating the relative positions, as far as they are known, of all the monuments of this kind. This chart may be improved from time to time, and will be the means of eliciting important additional information. Indeed this whole subject should be prosecuted by the institution, until all accessible information has been collected. The Smithsonian Institution owes this to the world. The work should be done quickly, for the plough, as well as the elements, are every year rendering less visible the outlines and distinctive forms of these remnants of the arts and policy of the ancient inhabitants of this continent.

Bibliographia Americana.

In the last report an account is given of the preparation of a work on the bibliography of America, by Henry Stevens, of Vermont. This work, it will be recollected, is to contain a brief account of every book published in, or relating to, North America, prior to 1700, with references to the different libraries in this and other countries, in which these works are to be found. The institution agreed to publish this work at its own expense, provided, on examination by a commission of competent judges, it is found properly executed. Mr. Stevens is now engaged in the British Museum cataloguing all the works embraced in his plan, and informs me that he is making good progress in his enterprise.

Reports on the Progress of Knowledge.

Of the reports on the progress of knowledge proposed in the plan of organization, none have as yet been published, though several of these

mentioned in my report of last year have been completed, or are very nearly ready for the press. The appropriations, however, for the last year were not found sufficient for carrying out further this part of the plan.

The most important report now in progress is that on the forest trees of North America, by Dr. Gray, Professor of Botany in Harvard University. It is intended in this work to give figures from original drawings of the flowers, leaves, fruit, &c., of each principal species in the United States proper, for the most part of the size of nature, and so executed as to furnish colored or uncolored copies—the first being intended to give an adequate idea of the species, and the second for greater cheapness and more general diffusion.

This work will be completed in three parts, in octavo, with an atlas of quarto plate—the first part to be published next spring. A portion of this will be occupied with an introductory dissertation giving the present state of our knowledge, divested as much as possible of all unnecessary technical terms—of the anatomy, morphology, and physiology of the tree—tracing its growth from the embryo to its full development and reproduction in the formation of fruit and seed. This will be illustrated by drawings from original dissections under the microscope, and sketches made, in every instance, from Nature. As the work will be adapted to general comprehension, it will be of interest to the popular as well as the scientific reader.

Report on the history of the discovery of the planet Neptune.—The first part of a report on recent discoveries in astronomy has been completed, and is ready for the press. This is written by Dr. B. A. Gould, of Cambridge, editor of the *American Astronomical Journal*. Copious references to authorities are given in foot-notes, which will render the work interesting to the professed astronomer as well as to the less advanced student.

A report has been prepared by Professor Guyot, late of the University of Neuchâtel, on the construction and use of meteorological instruments, more particularly designed for distribution among our meteorological observers. This gentleman is now engaged, at the expense of the Regents of the University of the State of New York, in establishing a new system of meteorology, and in instructing the observers in the use of the instruments; for which service he is well adapted by his experience in a similar undertaking in Switzerland.

The report on the application of chemistry to agriculture is also nearly ready for the press. This is by Dr. Lewis C. Beck, of Rutgers College, New Jersey.

Collections.

Apparatus.—The plan of organization also contemplates the formation of a museum of physical instruments, which may be used for experimental illustration and original research, and may serve as models to workmen as well as to illustrate the general progress of inventions in this line.

The munificent donation of Dr. Hare has enabled us to commence this collection with very flattering prospects. It now contains, besides the articles of Dr. Hare, instruments for the illustration of the principles of light, heat, and sound, procured from Paris, and a full set of pneumatic instruments, of superior size and workmanship, constructed expressly for the institution by Mr. Chamberlain, of Boston; also, a number of chemi-

cal articles purchased during the last year; a set of magnetical instruments, already noticed; a standard barometer and thermometers, and other meteorological instruments, procured from Europe. It is proper that I mention, in this place, that we are indebted to Professor Snell, of Amherst, for superintending the construction of a set of ingenious instruments devised by himself for the illustration of wave motion. It is believed that the collection of instruments of research will, in due time, not only form a feature of great interest, but that it will surpass in extent similar collections in other countries.

It is intended to publish a descriptive catalogue of all the instruments, for the use of visitors, and it may be advisable to illustrate this by woodcuts, particularly as we have had presented to us all the wood engravings employed by Dr. Hare in describing his apparatus.

It is not in accordance with the plan of organization to confine the instruments of observation to the immediate use of the officers of the institution, but to suffer them to be employed, under certain restrictions, by others who are possessed of the requisite degree of skill. This practice may be attended in some cases with loss, and the breakage of instruments, but the expenditure which may be incurred on this account will probably be more than compensated by the advance to knowledge resulting from the adoption of the plan.

A small appropriation has been made for collections in natural history during the past year; and, under the direction of a distinguished young naturalist, upwards of ten thousand specimens of vertebrated animals, principally reptiles and fishes, have been obtained. Many of these are rare specimens from unexplored parts of our country, and a considerable number of them consists of undescribed species. They furnish the materials for an interesting series of memoirs on physiology, embryology, and comparative anatomy. The whole cost of making this collection did not exceed \$140. We are convinced, from the important results obtained by this small expenditure, that a most valuable working collection of objects of the natural history of North America can be obtained at a very moderate outlay of funds.

Library.

During the past year the process of developing the plan of the library, as given in the programme, has been carried out by Professor Jewett as far as the funds which could be devoted to the purpose would allow.

Considerable progress has been made in the plan of forming a general catalogue of all the important libraries in the United States, and Professor Jewett has wisely commenced the preparation of a catalogue of all the books to be found in the different libraries in the city of Washington, including those of the several departments of the government, and in this way he will be enabled to exhibit the importance of catalogues of this kind.

He has also devoted much time to the continuation of his researches relative to the statistics of libraries in this country, and for an account in detail of his valuable labors in this line I must refer to his report herewith transmitted. I will also direct attention to some important suggestions in his report on the subject of the deposit of books for securing copyright, and the establishment of a bulletin.

Museum.

The formation of a museum of objects of nature and art requires much caution. With a given income to be appropriated to the purpose, a time must come when the cost of keeping the objects will just equal the amount of the appropriation; after this no further increase can take place. Also, the tendency of an institution of this kind, unless guarded against, will be to expend its funds on a heterogeneous collection of objects of mere curiosity; whereas the plan presented in the programme contemplates complete definite collections arranged for scientific purposes, rather than for popular display. For some suggestions on this point see page 24.

In this connexion there is one point which I beg to present to the consideration of the board as one of much importance, and which, if possible, should be decided at this meeting, because on it will depend the arrangement of that part of the building devoted to natural history. I allude to the acceptance of the museum of the exploring expedition.

By the law incorporating this institution, "all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens belonging to or hereafter to belong to the United States, which may be in the city of Washington, in whosoever custody the same may be, shall be delivered to such persons as may be authorized by the Board of Regents to receive them."

This law evidently gives to the Smithsonian Institution the museum in the Patent Office, the conservatory of plants, and all specimens of nature and art to be found in the several offices and departments of the government. The act, however, cannot be construed as rendering it obligatory on the Regents to take charge of these articles, if, in their opinion, it is not for the best interests of the institution that they should do so. Though one of the reasons urged upon the Regents for the immediate erection of so large a building was the necessity of providing accommodation for this museum, I have been, from the first, of the opinion that it is inexpedient to accept it.

This museum was collected at the expense of the government, and should be preserved as a memento of the science and energy of our navy, and as a means of illustrating and verifying the magnificent volumes which comprise the history of that expedition. If the Regents accept this museum, it must be merged in the Smithsonian collections. It could not be the intention of Congress that an institution founded by the liberality of a foreigner, and to which he has affixed his own name, should be charged with the keeping of a separate museum, the property of the United States. Besides this, the extensive museum of the Patent Office would immediately fill the space allotted for collections of this kind in the Smithsonian edifice, and in a short time another appropriation would be required for the erection of another building. Moreover, all the objects of interest of this collection have been described and figured in the volumes of the expedition, and the small portion of our funds which can be devoted to a museum may be better employed in collecting new objects, such as have not yet been studied, than in preserving those from which the harvest of discovery has already been fully gathered.

The answer made to some of these objections has usually been, that the government would grant an annual appropriation for the support of the museum of the exploring expedition. But this would be equally ob-

jectionable, since it would annually bring the institution before Congress as a supplicant for government patronage, and ultimately subject it to political influence and control.

After an experience of three years, I am fully convinced that the true policy of the institution is to ask nothing from Congress except the safe-keeping of its funds; to mingle its operations as little as possible with those of the general government, and to adhere in all cases to its own distinct organization, while it co-operates with other institutions in the way of promoting knowledge; and on the other hand, that it is desirable that Congress should place as few restrictions on the institution as possible, consistent with a judicious expenditure of the income, and that this be judged of by a proper estimate of the results produced.

Lectures.

At the last meeting of the board an appropriation of five hundred dollars was made to defray the expense of lectures to be given before the Smithsonian Institution, a part of which only is expended. The first course, in accordance with this part of the plan of organization, was by Professor Koeppen, of Denmark, on Modern Athens. These lectures were illustrated by a number of large drawings, for the use of which the institution is indebted to the Lowell Institute, of Boston. A second course was delivered by Dr. Hitchcock, President of Amherst College, on geology, in the lecture-room of the east wing of the Smithsonian building; and both courses were attended by large and apparently interested audiences. The results of these lectures indicate that much good may be effected in Washington by this means of communicating knowledge. No city, perhaps, of the same number of inhabitants, contains so many intelligent and well-educated persons desirous of obtaining information, and no point in our country is so favorably situated for the dissemination of opinions by means of lectures as the political centre of the American Union. Invitations have been given to a number of distinguished gentlemen in different parts of the United States to favor us with courses of lectures during the present session of Congress, and in almost every case the invitation has been accepted. It is intended to extend these invitations so as to call here in succession all who have distinguished themselves in literature or science. We shall not seek mere popular lecturers, whose chief recommendation is fluency of speech or powers of rhetorical declamation, but chiefly those who are entitled, from their standing and acquirements, to speak with authority on the subjects of their discourse, and whose character will tend to give due importance to their communications. It is to be regretted that the amount of funds which can be devoted to this object is not as great as could be wished. It is hoped, however, that many persons will consider the opportunity of visiting Washington, and the compliment paid by the invitation, as in part a remuneration for the labor and time which their lectures may cost. But in all cases sufficient should be allowed to defray all necessary expenses, and, as soon as the state of the funds will permit, to reward liberally, rather than otherwise, those who are called to assist the institution in this way. I forbear to publish the names of those who have consented to lecture, lest they should be accidentally prevented from filling their engagement, and the public thus be disappointed.

To facilitate the approach to the building at the time of these lectures the walks were temporarily improved, at a considerable expense to the institution. It is hoped that the authorities of the city of Washington will cause bridges to be erected across the canal, and walks to be constructed through the public grounds, to facilitate the approach to the building, and that the institution will not be expected to provide accommodations of this kind.

Building.

The east wing of the building was taken possession of by the Secretary in April last, and has since been constantly occupied. The west wing is now finished, and it is contemplated to occupy it temporarily as a library until the portion of the main building intended for this purpose is completed.

The plan of the Smithsonian building was designed by the architect, and recommended to the board by a committee of the Regents, before the programme of organization was adopted. It is not strange, therefore, when the building came to be occupied, that changes in the internal arrangement should be deemed advisable which would better adapt it to the wants of the institution. Such changes, at my suggestion, have been made; and for the propriety of these I am responsible. They are principally, however, those of simplification, and in themselves add nothing to the cost of the edifice. An increased expense, however, will arise out of the furnishing of new rooms which have been acquired by the alterations.

All of which is respectfully submitted.

JOSEPH HENRY,
Secretary of the Smithsonian Institution.

APPENDIX

TO

THE SECRETARY'S REPORT.

The following is a detailed account of the botanical explorations in New Mexico and California, referred to in the report:*

Mr. Lindheimer was sent to Texas, and an account of his collections was published in the Boston Journal of Natural History, vol. 5. They were made in 1813-'4, near Houston, and west of the Colorado, and have long since been distributed to subscribers.

His collections made further west, at New Braunfels, and in excursions in the dangerous regions westward, on the Llanos, &c., in 1815-'8, are now in course of study by Dr. Gray and Dr. Engelman. The sets will soon be distributed to the subscribers. It is desirable that the Smithsonian Institution should become a subscriber. The sets at furthest will comprise not more than five hundred species, which, at \$8 per hundred specimens, will amount to \$40.

Mr. Augustus Fendler was sent to Santa Fe in August, 1846, passed the winter there, and explored the country around until August, 1847, when he was obliged to return. (See memoir on his collections, published in the Memoirs of the American Academy, vol. 3, new series.) The fuller sets of these plants have all been disposed of. The largest on hand contains only two hundred and five species, which the Secretary has taken for the Smithsonian Institution at the usual price of \$10 per hundred specimens.

Next, aided by advances from a citizen of Boston interested in encouraging these scientific investigations, who advances \$200 a year for three years, Mr. Fendler was provided with the necessary outfit, and, with his brother as an assistant, was sent to explore the great interior valley between the Rocky mountains and California, to make his headquarters at the Mormon city on Utah lake, and explore the surrounding regions—especially the country south and southeast between that place and Santa Fe, which is entirely new ground, and bids fair to be of great interest. Meeting with an accident near Fort Kearny, on his way out, which destroyed much of his paper and other indispensable equipments, with a part of his mules, he has, as I learn from accounts received, been obliged to turn back to Independence, and is now refitting, in the hope still of reaching his ground this autumn, so as to begin his researches early next spring. If the Smithsonian Institution would subscribe to this enterprise the same as the private gentleman of Boston referred to, *or half that sum*, it would afford very important—indeed, I must now say, almost indispensable—assistance; and it would receive, in return, an equivalent share of the

* This information is from Dr. Gray, of Cambridge.

scientific proceeds of the expedition. Fendler is a collector of extraordinary aptitude and skill, and his specimens have been pronounced to be unsurpassed in perfection.

Mr. Charles Wright started last summer from San Antonio, Texas, to *El Paso del Norte*, in the southern part of New Mexico, accompanying the United States troops. He went on his own risk and that of Dr. Gray, aided by an advance of \$125 made up by two gentlemen of Boston. It is desirable to keep him in New Mexico to explore the unvisited regions of it for another year at least, if not for two or three. A subscription of \$150 per year for this and next year, at least, on the part of the Smithsonian Institution, would be a most important contribution to the advancement of American science, and would bring this enterprise to a successful issue. The collections made during the present season in a region never before visited by a naturalist are expected to come to hand, and to be distributed, in the course of the ensuing winter.

Communication from Professor Agassiz, relative to the formation of a Museum.

“As you do not contemplate forming a general museum in the Smithsonian Institution, but limit yourself to preserving the specimens referred to in the papers published in the Contributions, and to collecting materials upon some few special subjects, I would respectfully suggest that a special collection of living and tertiary shells of the United States, and another of embryos and young animals of all classes, be the subjects to which you direct the attention and care of the keeper of the natural history collections. These collections should be made with special reference to the solution of some most important questions now pending in the study of natural history.

“Let me first point out to you the objects of a special collection of living and tertiary shells. It is a problem to ascertain the mean annual temperature of the different geological periods anterior to the present condition of our globe. Various estimates have been made, but they do not rest upon sufficient data. Now the United States are most favorably situated for the solution of this question. There is a shore extending north and south over more than twenty-three degrees of latitude, along which shells are everywhere common, and present a succession of remarkable changes in their distribution and mode of association from the northernmost boundaries of that zone to its southern extremity, closely connected with the differences of climate under whose influences they live in different latitudes. A more minute investigation into the limits of this distribution, which has already been correctly ascertained by Dr. A. A. Gould for the northern States, would soon show such precise relations with the climate as to enable the observer to conclude from the shells the climate, (where he knows only the shells without indications upon their origin) and vice versa. What renders the United States particularly adapted for such investigations is the fact, that there is along the same shore a belt of tertiary deposits extending over as wide a zone as the present seashore. In these deposits shells abound; and, what is most remarkable, the older or lower beds contain a greater proportion of species similar to those which at present occur further south, whilst the uppermost layers contain such as are still to be found alive in the same vicinity. Large collections of these

fossil shells, made from the different tertiary beds in different latitudes from Maine to Florida, judiciously kept apart, would no doubt in time afford as precise documents for ascertaining the mean annual temperature of these shores during the different periods of the tertiary times, as a series of thermometric observations. The person intrusted with the collection of these materials should of course know the difference between the successive beds of the tertiary deposits, and also the importance of never mixing fossils from different beds. Nothing would contribute more directly to advance the solution of this problem than to obtain from the superintendent of the United States coast survey some soundings and dredgings at different depths, as the shells which live about low-water mark are very different from those which occur successively at different depths, and such collections would contribute to establish the ratio of influence which climate has upon living beings. Species which are found near the shores at a given point occurring also at various depths further south, it is plain how important it would be to ascertain minutely their distribution in both directions horizontally and vertically. Such collections should be extended to the classes of corals and echinoderms, including in the latter the star fishes and sea urchins.

“The other collection to which I call your attention is a series of embryos and young animals. There is no museum at present in which there is anything like a collection of this kind, as it should be everywhere, since the importance of embryology has been fully appreciated. Taking care that such series be put up in the Smithsonian Institution, would at once give to the collections of that establishment the stamp of a true progressive scientific museum, even if it was confined to but few branches. Embryonic collections can be made with a two fold object: first, with a view of tracing the mode of formation and successive changes of organs, constituting anatomical and physiological embryology; second, with a view of comparing the changes of forms which young animals undergo with the permanent forms of others similar to them, constituting zoological embryology. To contribute to the progress of both these branches of embryology, distinct collections should be made and kept as distinct as our zoological and anatomical collections generally are. My idea is, that an anatomical museum of *preparations* from embryos and young animals of all classes should be made at the same time as a zoological museum of young in all ages and stages of growth, preserved whole. Having but recently called attention to the importance there is in comparing the different stages of growth of all animals in order to ascertain their true relative position in a natural system, there is no possibility at present of appreciating the full value which such a collection will have for the future. Every day I feel the want of it, and hundreds of questions, which arise constantly since the idea has been started, cannot be settled, simply because there are no materials at hand anywhere for comparison. Devoting a portion of your resources to such collections would at once give you a start before all other museums, and the time may come, even within a few years, when that collection would be as much in advance of all other collections, as the museum of comparative anatomy in Paris was in advance of all similar establishments so long as Cuvier devoted his attention to it. The expenses would not be very great, as, in the beginning, series made from the most common animals would be quite sufficient. I can but repeat what I have said more than once, that the best chance

for making rapid progress in this, as in every other branch of natural history, is to be largely supplied with the most common things. Hunting for varieties kills the spirit of deep investigation. Series of skeletons, brains, hearts, intestines, sexual organs, skins, &c., &c., of the same common animals in all ages, for the different classes, would fully answer the purpose. Making such collections, for instance, for the class mammalia only from the cat or dog, the rabbit, the bat, the mole, the hog, the horse, the sheep, goat, or cow, the opossum, would be quite sufficient. For birds, from a hawk, a pigeon, a hen, a heron, a duck, a raven or crow, a fly-catcher, a sparrow, a woodpecker, a humming-bird, and a parrot, would be enough. For reptiles, from a turtle, a lizard, a snake, a salamander, and a frog. For fishes, from a shark, a skate, a lamprey eel, &c., &c. You see nothing rare, but complete series of anatomical preparations of young in different stages of growth, and also complete series of these young preserved whole for zoological comparison. An appeal should be made throughout the country to furnish materials. A stay of a few weeks in one of the great centres, where hundreds of thousands of pigs are killed, would afford invaluable materials to clear up the history of their growth, and to establish the true relations between living and fossil pachyderms—nay, perhaps give us the most correct outlines of those types which have become extinct, and the forms of which are perhaps only preserved in our days in some transient state of our living species. I entertain, indeed, no doubt about the practicability of drawing correct figures of the fossil paleotherium, anoplotherium, &c., from the embryos of our hogs and horses.

“There is a third point to which I would call your attention. It has struck me that the reason why comparative anatomy is so much neglected in this country, and scarcely at all studied by the young physicians, whilst in Germany it is made the foundation of all medical studies, is to be attributed to the fact that there is no text-book, no atlas of anatomical plates, made upon materials which can be obtained on this continent, and hence the impossibility for the beginner to make use of the works, even the best treatises, which we now possess. A chemical, philosophical, astronomical, mineralogical or geological text-book, and the necessary apparatus for studying the phenomena of inorganic nature, can be and have been imported, and found useful; as the laws which govern them are not only the same, but the materials themselves thus concerned are identical. Not so with animals and plants. Let a medical student in this country open Cuvier’s wonderful papers upon the anatomy of molluscs, which have for nearly half a century been the models offered to our students for imitation, and he will not find one single identical species here for examination or comparison. All the investigations which have most directly contributed to the advancement of comparative anatomy and physiology within the last twenty years have been made upon animals which do not occur upon this continent, and I do not see how American students in general can be induced to take part in this movement unless they are provided with a set of illustrations resting upon native animals, easily obtained anywhere.”

The thanks of the Board of Regents are due to the following gentlemen who have undertaken the labor and responsibility of examining memoirs which have been submitted to them. It is proper to observe that the commissioners have no means of verifying, by their own experience, the correctness of the statements presented to them for examination, and therefore they cannot be expected to vouch for more than the general character of the memoir.

John Torrey, M. D.,
Colonel J. J. Abert,
Lieut. M. F. Maury,
Lieut. Charles H. Davis,
Professor Stephen Alexander,
Professor Benjamin Peirce,
Professor W. C. Bond,
Major A. Mordecai,
Captain Frederick A. Smith,
Lieut. M. L. Smith,
L. Gale, M. D.,
C. D. Meigs, M. D.,

T. W. Harris, M. D.,
Professor E. Salisbury,
Professor Gibbs,
J. E. Holbrook, M. D.,
Professor Louis Agassiz,
Professor Charles Davies,
Professor Hackley,
Charles C. Page, M. D.,
Right Rev. Bishop Alonzo Potter,
Brantz Mayer, esq.,
Colonel J. D. Graham.
T. H. Lane, esq.

A list of observers from whom monthly meteorological returns have been received at the Smithsonian Institution during the year 1849.

MAINE.

Samuel H. Merrill, *Old Town*.
Milton Welch, *Houlton*.
George B. Barrows, *Fryeburg*.
James G. Garland, *Biddeford*.
Rufus Buck, *Bucksport*.
S. A. Eveleth, *Winham*.

Joshua Bartlett, *Whithead*.
J. D. Parker, *Steuben*.
Stephen Gilman, *Bangor*.
S. Eveleth, *Patten*.
George Prince, *Thomaston*.

NEW HAMPSHIRE.

William Prescott, *Concord*.
Robert C. Mack, *Londonderry*.
Rev. L. W. Leonard, *Dublin*.

Thomas B. Loughton, *Isle of Shoals*.
Doctor Charles Chase, U. S. Navy,
Portsmouth.

VERMONT.

Rev. Zadock Thompson, *Burlington*. Professor W. H. Parker, *Middlebury*.
Charles C. Frost, *Brattleboro*. R. M. Manly, *Randolph*.
D. P. Thompson, *Montpelier*.

MASSACHUSETTS.

Jacob Bachelder, <i>Lynn.</i>	James Ritchie, <i>Duxbury.</i>
Charles J. Gillis, <i>Lowell.</i>	Henry Rice, <i>Mendon.</i>
Samuel F. Haven, <i>Worcester.</i>	Abraham S. Peet, <i>Stockbridge.</i>
Benjamin Kent, <i>Roxbury.</i>	Amasa Holcomb, <i>Southwick.</i>
Gustavus A. Hyde, <i>Framingham.</i>	John G. Metcalf, <i>Mendon.</i>
William Bacon, <i>Richmond.</i>	Thomas Bailey, <i>New Bedford.</i>
Professor E. S. Snell, <i>Amherst.</i>	

RHODE ISLAND.

Professor A. Caswell, *Providence.*

CONNECTICUT.

Rev. T. Edwards, <i>New London.</i>	M. H. Cobb, <i>North Colebrook.</i>
Prof. Aug. W. Smith, <i>Middletown.</i>	Doctor Ovid Plumb, <i>Salisbury.</i>
Professor E. Cutler, <i>New Haven.</i>	Charles H. Hoadly, <i>Hartford.</i>

NEW YORK.

L. F. Munger, <i>Albion.</i>	Cornelius Chase, <i>Chatham.</i>
Ezra Parmelee, <i>Morley.</i>	E. Giddings, <i>Lockport.</i>
C. F. Maurice, <i>Sing Sing.</i>	John F. Jenkins, <i>North Salem.</i>
E. A. Dayton, <i>Madrid.</i>	J. W. Earle, <i>Springville.</i>
John Bowman, <i>Baldwinsville.</i>	C. Strong, <i>Oswego.</i>
Walter D. Yale, <i>Houseville.</i>	U. S. Naval Station, <i>Sackett's Harbor.</i>
J. E. Breed, <i>Smithville.</i>	U. S. Navy Yard, <i>New York.</i>
Ephraim N. Byram, <i>Sag Harbor.</i>	William E. Guest, <i>Ogdensburg.</i>
Prof. Chs. B. Warring, <i>Poughkeepsie.</i>	Albert G. Carll, <i>Jericho, Long Island.</i>
John Lefferts, <i>Lodi.</i>	Professor Wetherill, <i>Rochester.</i>
James M. Tower, <i>Waterville.</i>	J. P. Chapman, <i>Clockville.</i>
O. W. Morris, <i>New York city.</i>	Jas. H. Ball, <i>Alps, Rensselaer county.</i>
Elisha Foote, <i>Seneca Falls.</i>	James B. Trevor, <i>Lockport, N. Y.</i>
John P. Fairchild, <i>Seneca Falls.</i>	L. A. Beardsley, <i>South Edmeston,</i>
Dr. F. B. Hough, <i>Somerville.</i>	<i>Otsego county.</i>
A. Hosmer, <i>Buffalo.</i>	

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Jacob S. Gary, <i>Lambertsville.</i>	W. A. Whitehead, <i>Newark.</i>
Professor Adolph Frost, <i>Burlington.</i>	John Clement, jr., <i>Haddonfield.</i>
R. L. Cooke, <i>Bloomfield.</i>	

PENNSYLVANIA.

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A. R. McCoy, <i>Easton.</i>	Dr. Paul Swift, <i>Philadelphia.</i>
Prof. J. R. Williams, <i>Canonsburg.</i>	William A. Stokes, <i>St. Mary's.</i>
Edward Fenderich, <i>Pittsburg.</i>	Ebenezer Hance, <i>Morrisville.</i>
Prof. M. Jacobs, <i>Gettysburg.</i>	F. L. Stewart, <i>Canonsburg.</i>

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 C. P. Jones, *Valley Forge*.
 Freeman Lewis, *Union Town*.
 Andrew Roulston, *Freeport*.
 John Jackson, *Darby*.
 John Wise, *Lancaster*.
 David Peelor, *Indiana*.
 Corydon Marks, *Manchester*.
 Dr. H. Smyser, *Pittsburg*.
 R. P. Stevens, *Ceres*.
 Benjamin Grant, *Erie*.

Prof. S. F. Baird, *Carlisle*.
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 L. R. Huebener, *Bethlehem*.
 Prof. L. D. Williams, *Meadville*.
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 F. A. Muhlenburg, jr., *Lancaster*.
 Henry W. Thorp, *Wellsboro*.
 U. S. Navy Yard, *Philadelphia*.
 Lieut. Joseph Reed, U. S. N., *Phila.*
 Dr. J. Heiseley, *Harrisburg*.

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Prof. W. A. Norton, *Newark*.

John Burton, *Lewes*.

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 A. P. Dalrymple, *Nottingham*.
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 Benjamin Hallowell, *Alexandria*.
 B. R. Wellford, *Fredericksburg*.

R. F. Astrop, *Diamond Grove*.
 J. B. Imboden, *Staunton*.
 U. S. Navy Yard, *Gosport*.
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Rev. George Duffield, *Detroit*. Dr. H. R. Schetterly, *Howell*,
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 Dr. John T. Plummer, *Richmond*. Prof. S. H. Thompson, *South*
 B. M. Newkirk, *Laporte*. *Hanover*.
 Prof. Joseph Tingley, *New Castle*. Dr. D. D. Owen, *New Harmony*.

ILLINOIS.

Rev. Geo. B. Giddings, *Quincy*. Silas Meacham, *Monroe*.
 S. Y. McMasters, *Alton*. Norton Johnson, *Alton*.
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 Prof. William Coffin, *Jacksonville*. Dr. S. B. Mead, *Augusta*.

IOWA.

T. S. Parvin, *Muscatine*.

WISCONSIN.

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county. Prof. S. P. Lathrop, *Beloit*.
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Canada West. *John's, New Foundland*.
 Henry Poole, *Pictou, Nova Scotia*.

INDIAN TERRITORIES.

P. P. Brown, *Doaksville, Choctaw* T. B. Van Horne, *Tahlequah,*
Nation. *Cherokee Nation*.

To the Secretary of the Smithsonian Institution :

A rapid growth of the library during this period was not expected. We had not at our disposal funds for the extensive purchase of books. But although we have been compelled to postpone the fulfilment of our design in one of its most essential features, the delay has been improved in making arrangements which will greatly facilitate our future progress, and in advancing, to a degree which would not otherwise have been possible, the plans detailed in my last report, for rendering our library a centre of bibliographical reference.

Previous to the present year, the books belonging to the institution were few, and were in the hands of the various officers, the Building Committee, and gentlemen engaged in preparing memoirs for our publications. They have been collected together, arranged, and prepared for use. For the first two or three months they were lodged in a room in the Patent Office, obligingly placed at our disposal by the Hon. E. Burke, then Commissioner of Patents. In March, the books were transferred to the second story of the eastern range of our own building, where they still remain. The spacious rooms of the western wing are now nearly ready for occupation. Temporary shelves have been erected for the accommodation of the books, and we propose soon to remove them thither.

The collection, though small, forms a respectable beginning.

The following table exhibits the number of books and other articles belonging to the library, including a few deposited by an individual for the use of the institution:

Books -	-	-	-	-	-	-	4,233
Pamphlets -	-	-	-	-	-	-	755
Engravings, in sheets or framed	-	-	-	-	-	-	1,383
Maps and charts, in sheets or mounted	-	-	-	-	-	-	42
Music, in sheets	-	-	-	-	-	-	106
Architectural drawings	-	-	-	-	-	-	30
Other articles, (five MSS., two medals, &c.)	-	-	-	-	-	-	29
Whole number of articles	-	-	-	-	-	-	6,578

These have been derived from the following sources:

	Books.	Pamphlets.	Engravings.	Maps.	Music.	Drawings.	Other articles.	Total.
Purchases	2,316	25	1,335	.....	.....	.....	5	3,681
Donations	157	695	47	22	.....	30	2	953
Copyrights	887	35	1	20	106	.....	22	1,071
Deposits	873	.....	.....	.....	.....	.....	.....	873
	4,233	755	1,383	42	106	30	29	6,578

The books purchased may be classified as follows:

Memoirs of learned societies, and literary and scientific journals	-	-	-	-	-	-	-	1,062 volumes..
Works on the fine arts, including those purchased by the Building Committee	-	-	-	-	-	-	431	"
Bibliographical works	-	-	-	-	-	-	699	"
Scientific works purchased for the use of authors	-	-	-	-	-	-	124	"

The *purchases*, it will be seen, have been few, for the imperative reason already mentioned. They do not comprise all the books in either of the selections, which I had the honor to present last year; nor can we hope to buy them all with even another annual appropriation. It will be observed, too, that some books have been bought in other departments than those to which the selections mentioned were confined. For a large library, it is sometimes wise to depart from a plan of purchasing, which, on general principles, may have been adopted as the best. The exigencies and opportunities of the book market may not only justify but demand such a departure. A collection of books which may have occupied in gathering it the best years of an active life, and the constant thoughts of a highly cultivated mind, may be offered to us at a low price. In buying it, we get not only the books, but the study and labor which were necessary for selecting and procuring them. Although, therefore, the collection be out of the line of our immediate plans, it should not, on that account alone, be refused. The temptations to swerve from an established system are, however, from this source, both numerous and strong; and good judgment is necessary to determine, in each case, the course to be pursued.

With reference to *donations*, those already received are believed to be no criterion by which to judge of our probable annual accessions from this source. It is not generally known that we are ready to receive such presents. No formal invitation for them has been issued. The history of all the libraries in this country is, however, singularly instructive upon this point. More than three-fourths of all the books in our public libraries are presents. Nearly the same thing may be said of some of the large libraries of Europe. Of 435,000 volumes in the British Museum, more than 250,000 were presented. Our situation in this respect is peculiarly promising. The seat of government of the United States must have an important and growing influence in literary affairs. There will always be among the officers of the government, the members of Congress, and

the foreign diplomatic corps, men of high attainments in science and letters. Our institution will, we may hope, receive their warmest sympathy. During the sessions of Congress, there will be also a large concourse of visitors from our own and other lands, whose interest is strong in learning, and who will rejoice to find here the facilities for the gratification of their favorite tastes. There will thus, we may hope, grow up here, aside from political circles, a literary influence like that around many of the universities of Europe, and like that which has added so much lustre to the capital of Prussia. If we are true to our position, if we secure and retain the confidence of that part of the community most interested in our operations, we shall attract the donations and bequests of a wide and ever enlarging circle of the friends of science and good letters. The meagreness of our public libraries has led men of wealth and of study to collect for themselves, in special departments, private libraries quite complete within the range to which they are limited. The aggregation of these libraries, as they now exist, would make perhaps a better library for research than could be formed by the union of all our public collections. It is not improbable that some of these will eventually be intrusted by their proprietors to the permanent guardianship of our institution. A scholar of adequate means nowhere, excepting in his own writings, presents to the world so good a representation of his tastes, pursuits, and attainments, as in the collections which he makes of the writings of others. His library shows the friends whom he chose, the companions in whom he delighted. It shows the range of his sympathies and the extent and minuteness of his investigations. It is the exponent of his intellectual life. It is associated with his severest struggles, his best aspirations, his noblest triumphs. He shrinks from the thought of its being scattered when he can no longer use it, and he seeks a safe depository where it may remain—the most enduring monument that can be erected to his learning and his munificence.

It is upon this honorable principle in the scholar's character that our hopes are founded. Such a depository as he seeks we wish to form here. Purchases of books, even were our whole income devoted to them alone, would never place us on an equal footing with the scholars of Europe. We have, however, other reliance. If we make a beginning; if we provide room, safe custody, and the proper facilities for rendering such a collection in the highest degree subservient to its legitimate purposes, private liberality will come vigorously to our aid.

Another source to which we may look for considerable accessions to our library, and one from which we have, as yet, little to report, is *exchanges*. The publications of the several State governments are numerous, and we can, without doubt, procure most of them by exchange and donation. The various learned societies to which we have presented copies of our first volume of Contributions, in thanking us for the gift, have assured us of their intention to send us their own memoirs and transactions in return. These will be of great value as the sources of current information in science and literature, and will go far towards remunerating us for the expense of our own publications. Even from libraries which put forth no regular publications, we have been promised valuable returns.

I herewith present a list of all the books, maps, charts, musical compositions, &c., deposited in our library by authors and proprietors, for the security of the copyright, in compliance with the requirement of the 10th section of the act of Congress establishing the institution. The

whole number of volumes and other articles received, from the 10th of August, 1846, to the 1st of January, 1849, is 1,071. Of these, 521 (viz: 389 books, 94 pieces of music, and 38 other articles) were received from January 1 to December 31, 1849. I have no means of ascertaining the exact number of copyrights secured in the United States during this period. The system of record and deposit in the clerks' offices and State Department is such as to render it difficult, if not impossible, to ascertain with accuracy the statistics of this subject. The librarian of the copyright rooms of the State Department informs me that the number of books annually deposited there is about 400. This cannot be more, I think, than one half of the whole number for which copyrights are nominally secured each year in the United States.

For the first two years and a half from the date of our charter, but few publishers complied with the requirement of the act of Congress, so far as our institution was concerned. During the last year, however, the number has greatly increased; and now, we regularly receive the publications of most of the large publishing houses in the country. The mere cost of the books sent is not regarded by publishers; but the transmission of them is sometimes troublesome and expensive. If they could be forwarded without expense to the publishers, and if we could render the deposite more immediately advantageous, no doubt many more books would be sent to us.

To the public, the importance, immediate and prospective, of having a central depot, where all the products of the American press may be gathered, year by year, and preserved for reference, is very great. The interest with which those who in 1950 may consult this library would view a complete collection of all the works printed in America in 1850, can only be fully and rightly estimated by the historian and bibliographer, who has sought in vain for the productions of the past. These publications should be kept apart from the rest of the library, in chronological order. They should be so marked that they may be readily and surely identified. They should be restricted to the library room, except when required in case of dispute respecting titles; but they should be freely accessible to all who wish to consult them in the library. Thus, in coming years, the collection would form a documentary history of American letters, science and art. It is greatly to be desired, however, that the collection should be *complete, without a single omission*. We wish for every book, every pamphlet, every printed or engraved production, however apparently insignificant. Who can tell what may not be important in future centuries?

"It is in the fragments, now so rare and precious, of some alphabets, of some small grammars published for the use of schools about the middle of the 15th century, or in the letters distributed in Germany by the religious bodies commissioned to collect alms, that bibliographers now seek to discover the first processes employed by the inventors of xylography and typography. It is in a forgotten collection of indifferent plates, published at Venice by Fausto Verantio, towards the end of the sixteenth century, that an engineer, who interests himself in the history of the mechanical arts, might find the first diagram of iron suspension bridges."—[Libri.]

But neither the collection of copyrights at the State Department, nor that in the library of Congress, nor our own, is complete, or approaching

completeness. Thus, the historical and bibliographical importance of each is greatly diminished.

To publishers it is necessary, for the security of their property, that a certified copy of each work should *somewhere* be preserved. The depositing of the copy in the office of the district clerk for the State Department, has been by the Supreme Court of the United States declared to be essential to securing a valid copyright. Whether the same be true with reference to the copies required for our institution and the library of Congress, is a question of law which I am unable to answer. The interest of publishers, as well as of the public, seems to require additional and more explicit legislation on this subject.

In this connexion I beg leave to suggest the establishment of a *monthly bulletin*, in which the list of all works received during the preceding month, with the titles in full, the date of deposit, and the name of the proprietor, should be printed. Copies of this might be sent to every publisher who complies with the law. This journal might be widely and gratuitously distributed among the literary institutions of this country, and of Europe. The record would then be, as an advertisement, far more valuable to the proprietor than the book sent and the expense of transmission. Although I suggest the commencement of a bulletin in this particular connexion, I would not by any means confine it to the publication of the lists of copyright works. It might include a *scientific* as well as a *bibliographical* department.

In the bibliographical department might be published: 1st. Lists of publications deposited for the security of the copyright; 2d. Lists of accessions to the library and other collections, with the names of donors; 3d. Lists of new works published in Europe; 4th. The contents of the current numbers of the most important reviews and journals in this country and Europe, translating the titles of articles published in other languages than English; 5th. Items of intelligence and short essays of interest to book producers and readers.

This bulletin might at first be published at irregular intervals, as we find the materials, and it should be of such a general character as not to conflict with any established journal.

General catalogue of American libraries.

An important part of the plan for rendering our library immediately useful to American scholars is the proposed general catalogue of the books contained in all our public libraries. I am not aware that such a thing has ever before been attempted on so large a scale. The Navy Department of the French government published, a few years ago, a general catalogue of the books belonging to the various libraries (eleven in number) connected with that department. This useful work is contained in five large octavo volumes.

The French Department of the Interior, a few years ago, ordered a general catalogue to be made of all the manuscripts in the public libraries of France, and considerable progress has been made in the work.

But nothing like a general catalogue of all the libraries of a country has ever, to my knowledge, been undertaken. It has indeed been found next to impossible to make a catalogue of the largest library of each country. Much less possible would it be to make a general catalogue of all the

libraries. The project, however, has lately been discussed in England, as appears from the report and minutes of evidence of the Select Committee of the House of Commons on public libraries. The discussion may have been suggested by the plan proposed by our institution. Be this as it may, it resulted in a strong recommendation, on the part of the committee, of great attention to a *system of catalogues*, and a *central collection of catalogues*—objects which would seem too obviously important to require formal announcement, and yet which have been much disregarded. There are few countries, indeed, where a general catalogue would be at all practicable. It is not an easy task even here: but it is not impossible. To its accomplishment, I have, during the past year, devoted considerable time.

The plan of the work I gave in my last report. On this plan, fifty-five thousand titles have been prepared from printed catalogues, and four thousand have been transcribed.

The titles must, of course, partake of the imperfections of the catalogues from which they are derived. These are neither few nor small. I say this not for the purpose of finding fault with their compilers: such censure would often be misplaced and unjust. The fault for inaccurate catalogues is frequently attributable less to the librarians who make them, than to their employers, whose impatience will not brook the delay necessary for the preparation of a valuable catalogue, or whose false notions of economy lead them to select incompetent librarians because they will work cheaply, or require competent ones to perform so many other duties, that they have not time to devote to the catalogue; or, finally, who cripple and trammel them by prescribing absurd and unsuitable systems. Were the original registries in all our library catalogues satisfactory, a better service could hardly be rendered to learning, in this country, than by completing and printing this general catalogue.

The work at present furnishes us with a catalogue, in one alphabet, of the several libraries in Washington, as well as in Cambridge. But we hope that it will be found practicable, through the agency of the Smithsonian Institution, to secure a general uniformity among the various libraries in the preparation of catalogues, and to establish a system of *stereotyping them by separate titles*; which will enable each library to print annual editions of its catalogue, incorporating the titles of the last accessions to the collection; and which will enable us, by means of the same titles, to print a general catalogue of all the libraries. The adjustment of all the details of such a system must, of course, be the work of time, and it may be found impracticable for us to commence the enterprise until we have a printing office of our own.

Statistics of American Libraries.

In my last report, I stated that I had sent to the various librarians in the country a circular letter containing queries intended to elicit important information respecting the public libraries. I had not then received a sufficient number of reports to warrant my presenting detailed statements. During the last year I have received a large number of returns, and have collected, from various other sources, information respecting most of the public libraries of the United States, which I have the honor herewith to

present. I cannot suppose that this list contains all the public libraries in the country. I have reason to fear, on the contrary, that great numbers have been omitted, which are more important than some which have been noticed. I have sent out, however, more than 900 circulars, have written several hundred letters, and have endeavored to obtain full and accurate statistics. But, in the vast extent of our favored land there are almost innumerable collections of books, which are unknown beyond the sphere of their own usefulness. Of these it is impossible at once to gather perfect accounts. We may hope that the publication and circulation of the notes now collected will lead the officers of institutions, which we have unintentionally neglected, to give us knowledge of their existence and character. We hope to be useful to all of them in return, and to be in constant correspondence with them. Our own publications, and those intrusted to us for distribution, will be to them, as we have reason to suppose, acceptable and useful. We wish to ascertain the actual literary wealth of the country. This is necessary, to enable us to provide intelligently for its wants. My investigations have not been limited to the *public* libraries, though I have not felt at liberty to make detailed statements respecting private collections. These last, however, are of great value. In one sense they are *public* libraries. Almost without exception, access to them is freely allowed to all persons who wish to use them for research. The largest of all the private libraries in this country—that of our honored fellow-citizen, Col. Force—is the almost constant resort of the students of American history. The liberality of private collectors of books in this country is highly commendable. They are not ‘bibliomaniacs,’ nor ‘bibliotaphs,’ but men of sense and learning, who have been compelled, by the poverty of public collections, to supply for themselves the means of pursuing their investigations. They are not the men to be literary misers, or to give way to mean and unscholarly envy. Happy is it for the progress of our nation that such is the case.

These notices are not confined to the mere statement of the number of volumes and other articles in each library, but were intended to include a historical sketch of each, a general account of the kind of works of which it is composed, and a detailed account of many rare and valuable books and manuscripts; with the statement of the resources, the rate of increase, and the use made of the collection. For these details I must, of course, refer to the appendix. It may not, however, be out of place to insert here a summary of the number of libraries, with their size and general character.

The whole number of libraries, (including those of the district schools,) of which I have been able to collect accounts, is	-	10,640
The aggregate number of volumes	-	3,641,765
The whole number, exclusive of district school libraries	-	644
The aggregate number of volumes in these	-	2,144,069

(These are exclusive of pamphlets, manuscripts, maps and charts, &c.)

The number of libraries said to contain 50,000 volumes and upwards, is but four, namely: Harvard University, (including the public library, 56,000; Law, 13,000; Theological, 3,000; Medical, 1,200; students' libraries, 10,000 volumes,)	83,200
The Philadelphia and Loganian Libraries	60,000
Congress Library	50,000
Boston Athenæum	50,000

The number of libraries containing over 20,000, (counting with the college libraries those of societies of students connected with the colleges, and <i>excluding</i> the four libraries above mentioned) - - - - -	11
The number of libraries containing from 10,000 to 20,000 volumes - - - - -	38
The number of libraries containing from 5,000 to 10,000 - - - - -	75
The whole number of libraries containing over 5,000 volumes each - - - - -	138
Whole number of libraries containing between 1,000 and 5,000 volumes - - - - -	437

These libraries may be classed as follows:

1. *State libraries*, including those of the general government and those of the State courts. Almost all the States in the Union have organized State libraries. Those which have not, possess collections of books which will ere long serve as the foundations of such Libraries. These libraries are composed, to a great extent, of public documents of the general and State governments, with works on statistics, political economy, history, &c. Some of them, as the Congress library, the New York State library, &c., take a much wider range, and are extremely valuable collections for general reference.

The whole number of these libraries is - - - - - 38

The aggregate number of volumes contained in them is - - - 283,037

2. *Social libraries*, including athenaeums, lyceums, young men's associations, mechanics' institutions, mercantile libraries, &c.—These libraries are generally composed of popular works for reading rather than for reference. But among them are many of the best collections in the country. They generally contain only English books. I think, however, that any one, looking over the catalogues of these libraries, would be surprised and gratified to find them so well selected. History, biography, travels, fiction, and periodical literature, constitute the staple in most of them, though many are well supplied in almost every branch of knowledge.

I have reason to fear that the statistics which I have been able to collect are more incomplete with reference to this than to any other class. In some States, almost every town has, under some name, a social library. Most of these collections, it is true, are very small, containing less than a thousand volumes; but there doubtless are a great many, far more considerable in size, which I have unintentionally overlooked, but of which I hope hereafter to be able to give information.

The whole number of social libraries included in the notices is - - - 93

Their aggregate number of volumes is - - - - - 562,229

3. *College libraries*, (exclusive of students' libraries.)—Our colleges are mostly eleemosynary institutions. Their libraries are frequently the chance aggregations of the gifts of charity; too many of them discarded, as well nigh worthless, from the shelves of the donors. This is not true of all our college libraries; for among them are a few of the choicest and most valuable collections in the country, selected with care and competent learning, purchased with economy, and guarded with prudence, though ever available to those who wish to use them aright.

The number of college libraries in the notices is - - - 119

The aggregate number of volumes - - - - - 580,901

4. *Students' libraries* in colleges, professional schools, academies, &c.—The societies formed by students in our seminaries of learning for mutual improvement in debate and composition, for the most part, possess libraries. These are generally valuable collections of books of a popular character. Sometimes (in Yale College particularly) they are large, well-selected, and admirably arranged and kept. Dust seldom gathers on the books in such collections.

The whole number of which I have obtained statistics is - 134
The aggregate number of volumes - - - - 259,089

5. *Libraries of professional schools and incorporated academies.*

Whole number reported - - - - 222
Number of volumes - - - - 315,237

6. *Libraries of learned societies, scientific, historical, &c.*

Whole number - - - - 33
Number of volumes - - - - 143,576

7. *Public school libraries.*—The State of New York has 8,070 district school libraries, containing - - - - 1,338,848 vols.

The State of Massachusetts has, in some 1,500 libraries 91,539 “

The State of Michigan has, in 374 libraries - - 47,220 “

The State of Rhode Island has, in 35 libraries - 19,637 “

(This State has a library in every town but three.)

Other States have commenced such collections, and it is to be hoped that they may be greatly multiplied. They are not intended for pupils alone, but for parents also. They are composed of valuable books, designed and adapted to communicate useful knowledge in a popular way, and to cultivate all the higher elements of character. These, with the public journals, are the true enlighteners of the people. It is impossible to over-estimate their influence. It would hardly be possible for books of an immoral and injurious tendency to find their way among such collections.

8. *Sunday school libraries.*—Of these it has not been in my power to collect reliable statistics. The number of books which they contain is very great. These books, though mostly for juvenile readers, are always of a moral or religious character, and they have vast influence in forming the intellectual as well as the moral character of the people.

The comparative statistics presented in my last report, though not so full as I desired, were sufficiently so to show the general condition of the country in comparison to that of other countries, with reference to the apparatus for extensive study, as well as to the means of a more superficial but a widely diffused general culture and enlightenment. That some books should be accessible to all who are disposed to read, is more important as a means of general education, than that vast collections should be offered to the learned few. Our own condition is that of the wide diffusion of facilities for general reading. We have a large number of libraries; they are widely scattered; they are freely open to the public; the conditions of their use are so easy that none are deprived of them who are disposed to use them aright. Of this we may be justly proud. It is strictly in accordance with the nature of our institutions that we should consult first for the education and mental improvement of the great body of the population. Our institutions are founded upon the intelligence of *the many*; not upon the power, or wealth, or learning of *the few*. The diffusion of knowledge is our safeguard. The common school, the

village library, the cheap free press, are the supports, the guarantees, the champions of liberty. We shall never be found pleading for anything that interferes with these or abridges their usefulness. It is rather in their interest that we ask for the means of the highest literary acquisitions. The stream cannot rise higher than the fountain; if the source be not well supplied, the river fails. Teachers must have the facilities for learning; and as the standard of education is raised, higher attainments are demanded from teachers—attainments which cannot at present be made in this country by the aid of our public institutions. I use the word “teachers” in its widest acceptance, including all who attempt to instruct the public. It is in the appliances for thorough study, for original research, for independent investigation, that we are deficient. If a studious and reflecting American desires to review the history of the world, or some portion of it, from his American position, unless he be able to expend thousands of dollars in the purchase of books, he must abandon his design, for he cannot procure them from our public collections.

There has recently appeared from the American press, written by an American scholar, one of the most comprehensive, profound, and elegant works which has ever been published in the department of literary history. We receive it with patriotic pride. But this work could be written, in this country, only by one who was able to procure for himself the necessary literary apparatus. The library of the author contains some 13,000 volumes, and in the department of Spanish literature is one of the richest in the world. Our object is to provide that *every man* in America, though he be poor, whose mind kindles with a great theme, may be able to pursue it and enrich our national literature with the results of original investigations. It is sometimes said, in reply, that if any one desires books not already to be found, he may order them from Europe, and receive them in six weeks or two months. But the scholar may be, and generally is, poor. If not, he cannot, from the outset, foresee the extent of the field over which he must range, the side-paths which he must trace out in order to settle the true route; he will thus be subjected to great delay in ascertaining and collecting his materials. But the ordering of books is a very different matter from what is generally supposed. If the book be a new one, still in the market, it may be received within a few weeks; but if, as is the case with two-thirds, or perhaps nine-tenths of the books which may be needed, it be an old work, and only to be found at long intervals and by diligent search, the case is very different. His order will be answered only by the phrase, “out of print.” He may order again, and receive for reply, “cannot be obtained.” This will be his experience till he devotes years to gathering his materials, or till, discouraged by his ill success, he abandons his design and sinks down to be a mere copyist and compiler; to take his opinions at second-hand, from perhaps superficial and prejudiced writers—the only ones to whom he can gain access. We are thus, as a nation, condemned to literary dependence, if not imbecility.

The government, and the educated men of every State in Europe, have felt the importance of having at least one library in each country, where the materials for thorough scholarship should be garnered, and opened to the studious; yet no nation in Europe is in a situation so much demanding such a collection as ourselves. If Roscoe could not obtain, as has been stated, in England, the books which he wanted for writing the his-

tory of Leo X, it was comparatively easy for him to cross the channel and consult larger collections on the continent; but for our authors a voyage of several thousand miles, and the expense of a residence abroad, are almost insurmountable barriers to literary exertion.

To lay the foundations of a large library is not a short nor an easy task. Few persons, even among learned men, estimate its difficulties aright. Much time and labor must be expended with but small immediate results. Patience and toil must be exercised by those intrusted with the task, and tolerated, if not appreciated, by the public. The history of similar institutions must be studied in order to avoid their mistakes, and profit by their successful experience. Lists of books must be made by a diligent study of the literature of every department of knowledge, and a wide consultation with men profoundly acquainted with each. Plans must be formed, not merely for the moment, and to meet temporary exigencies; but such as are capable of indefinite extension; such as will not require to be remodelled even when the library is expanded to its greatest magnitude.

How much expense, delay, mortification, and complaint might have been spared, had the directors of the large libraries of Europe, from the outset, foreseen and provided for the great enlargement of these establishments.

The large public library is, in truth, a modern, a *new* institution. It is only within the last half century that the uses of such libraries have been fully understood and appreciated, and the method of forming and conducting them studied upon true principles, and with satisfactory results. The public libraries of the ancients, and those of later times, down nearly to the present century, were, as aids to learning, or means of popular progress in knowledge, not to be compared with those of our own day.

Books, as Voltaire has well said, rule the whole civilized world. But so rapid has been of late years the multiplication of them, that few scholars indeed can procure, by their own private resources, all that they need for their investigations. Yet, with the multiplication of books has increased the number which it is necessary for every one to consult who would not be behind the age in his learning. Hence public libraries have become an indispensable requisite to the attainment of liberal scholarship. The books in a public library cannot, however, be so well known to any particular student as those of his own shelves, nor can they be equally accessible to him; for he is not the only one who has a right to them, nor is it his convenience alone that is to be consulted. Hence arises the importance of so arranging, cataloguing, and keeping the library, as to facilitate the researches of each, without prejudice to the claim of any, or to the transmission of the privilege unimpaired to others. That the meeting of all these demands is no light matter, may be inferred from the fact that it has been made the serious study of some of the ablest minds in Europe; that its principles have been in Germany so thoroughly discussed and reduced to system, as, within the last twenty years, to have claimed admission into the family of the sciences.

It was in view of considerations like these, that the plans of the Smithsonian Library were made to embrace the early accumulation of works for bibliographical reference on all branches of learning; the collection of information respecting existing libraries of this and of other countries;

the opening of a correspondence with these libraries for the interchange of opinions, and for mutual aid and encouragement, as well as the novel and important project of forming a central catalogue of all the different works to be found in the public, and, as far as practicable, the private libraries of the country.

Nothing of course can fully compensate for the want of books; but while we are gathering them slowly, and waiting for the means of more rapid accumulation, these plans will, it is believed, promote the immediate usefulness of our institution, and prepare the way for the ampler realization of our hopes with respect to it in the future.

Respectfully submitted.

C. C. JEWETT.

JANUARY 1, 1850.

PROCEEDINGS OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION, AT THEIR FOURTH ANNUAL SESSION, COMMENCING WEDNESDAY, JANUARY 2, 1850.

Adjourned meeting of the third annual session of the Board of Regents, for the purpose of electing a Chancellor.

MARCH 7, 1849.

The board met at 10 o'clock a. m., in the Vice President's room, in the Capitol, agreeably to adjournment.

Mr. Seaton was called to the chair.

Present: Messrs. Bache, Davis, Fillmore, Hilliard, Mason, Seaton, and Totten.

The chairman stated the object of the meeting to be to elect a Chancellor in the place of Mr. Dallas, whose term of office as Regent had expired. On the ballot being counted, it appeared that Mr. Fillmore was unanimously elected.

On motion of Mr. Seaton, it was unanimously

Resolved, That the Chancellor and Secretary be requested to communicate to the Hon. George M. Dallas the high appreciation entertained by the board of his services as a Regent—particularly during the period of the organization of the institution—their thanks for the manner in which he has discharged the duties of presiding officer of the institution, and their respect for his character as a gentleman and a scholar.

On motion of Mr. Mason, it was unanimously

Resolved, That the Secretary inform the President of the Senate that a vacancy exists in the Board of Regents by the expiration of the term of Mr. Pearce, of the Senate.

The board then adjourned *sine die*.

FOURTH ANNUAL MEETING OF THE BOARD.

WEDNESDAY, JANUARY 2, 1850.

This being the day appointed for the annual meeting of the Regents, the board met at half-past twelve o'clock, in the eastern range of the Smithsonian building.

Present: Messrs. Davis, Fillmore, Mason, Rush, Seaton, and Totten. Mr. Fillmore, Chancellor of the institution, took the chair.

The proceedings of the last meeting, held March 7, 1849, were read and approved.

Professor Henry, the Secretary, stated to the board that since the last meeting, the Hon. Mr. Pearce, of Maryland, had been appointed a Regent from the Senate of the United States, and that there were now three vacancies in the board to be filled from the House of Representatives. The Secretary also stated that his report on the operations of the institution was ready to be laid before the board, but as the new members

would probably be appointed in a few days, he would suggest that the reading of it be deferred until the next meeting.

Mr. Seaton, chairman of the Executive Committee, stated that this meeting occurred too soon after the close of the fiscal year to permit the accounts to be made up, and requested that his report be postponed until the next meeting.

General Totten, chairman of the Building Committee, made a similar request.

No objection being made, the presentation of these reports was deferred until the next meeting.

In answer to a question from the Chair, the Secretary stated, in general terms, what business would occupy the attention of the board at this session.

On motion of Mr. Seaton,

The board adjourned, to meet on Friday, 11th inst., at 11 o'clock a. m.

JANUARY 11, 1850.

The Board of Regents met this day, agreeably to adjournment, in the Smithsonian building.

The meeting was called to order by Mr. Seaton. The Chancellor being absent, on motion of Mr. Seaton, Mr. Pearce was called to the chair.

The Secretary announced to the board that the Hon. Mr. Hilliard, of Alabama, Hon. Mr. Colcock, of Georgia, and Hon. Mr. Fitch, of Indiana, had been appointed Regents from the House of Representatives. These gentlemen appeared and took their seats at the board.

The members then present were Messrs. Colcock, Davis, Fillmore, Fitch, Hilliard, Mason, Pearce, Rush, Seaton, and Totten.

The proceedings of the last meeting were read and approved.

The report of the Secretary of the institution was presented and read.

On motion of Mr. Seaton, it was

Resolved, That the report of the Secretary be recorded, and form a part of the report of the Regents to Congress.

Mr. Seaton, on behalf of the Executive Committee, presented a report on the financial condition of the institution, and stated that the report was complete thus far, and that the portion relating to appropriations for the ensuing year would be presented at another time.

Gen. Totten presented the report of the Building Committee.

On motion of Mr. Pearce, it was ordered that these reports also be recorded.

The Secretary suggested that the journal of the meeting of the *establishment* be read. It was accordingly read.

On motion of Mr. Seaton, it was

Resolved, That the honorary members of the Smithsonian Institution be, and are hereby, invited to attend the meetings of the Board of Regents whenever they may think fit; and that the Secretary communicate to the present honorary members, and from time to time to such persons as may be elected honorary members, this resolution and invitation of the Board of Regents.

Mr. Davis presented, by request, a proposition of Mr. Harmon, of Ohio, for the encouragement of architecture.

This proposition was, on motion of Mr. Davis, referred to the Secretary and Executive Committee.

Mr. Rush presented a letter from Harrison Hall relative to the purchase of books; which was laid on the table.

The Secretary stated that he had received a note from the Hon. Abbott Lawrence, United States ambassador to Great Britain, concerning a communication from H. P. Bohn, offering for sale, at the price of thirty guineas, a small portrait of James Smithson, now in the possession of Mrs. Fitall, widow of a servant of the late Mr. Smithson.

This communication having been read,

On motion of Mr. Mason, it was

Resolved, That the Secretary be authorized to purchase the portrait of the late Mr. Smithson, spoken of by Mr. Lawrence in his letter of 10th of December, 1849.

On motion of Mr. Davis, the board adjourned, to meet on Saturday, the 18th instant, at 11 o'clock a. m.

SATURDAY, JANUARY 18, 1850.

Several of the Regents met this day, agreeably to adjournment. A quorum not being present, the meeting adjourned to the 22d instant.

TUESDAY, JANUARY 22, 1850.

The Board of Regents met, agreeably to adjournment, at half past 6 o'clock p. m., in the Smithsonian building.

Present: Messrs. Fillmore, Colcock, Davis, Fitch, Hilliard, and Pearce.

The Chancellor called the meeting to order, and the proceedings of the last meeting were read and approved.

The first business in order being Professor Jewett's report on the Library, the same was presented by the Secretary, and ordered to be read: it was accordingly read, and ordered to be printed.

A letter was presented by the Secretary, from Rev. N. Paddock, requesting the co-operation of the Smithsonian Institution with an Educational Institution proposed to be established in the city of Washington—together with the proposed answer of the Secretary: in which answer the board concurred.

A list of Chinese books for sale, and an accompanying letter from the Hon. Caleb Cushing, were laid before the board, read, and referred to the Secretary.

The proposition of Mr. Harmon, of Ohio, relative to architecture, was called up: no action, however, was taken upon it, and the board adjourned, to meet on Saturday, 26th instant, at 10 o'clock a. m.

SATURDAY, JANUARY 26, 1850.

The Board of Regents met this day at 11 o'clock, agreeably to adjournment.

Present: Messrs. Fillmore, Davis, Hilliard, Mason, and Pearce.

The Chancellor took the chair, and the proceedings of the last meeting were read.

The Secretary called the attention of the board to the astronomical ex

pedition of Lt. Gilliss, and a letter was read from him, dated at his station near St. Jago, Chili. The information thus placed before the board concerning the object and progress of the expedition, made apparent the importance of furnishing Lieut. Gilliss with improved instruments.

Whereupon, on motion of Mr. Mason, it was

Resolved, That the Secretary be directed to furnish Lieut. Gilliss with instruments for facilitating his physical and astronomical observations in Chili, at an expense not exceeding one thousand dollars.

The consideration of Mr. Harmon's plan for the encouragement of architecture was then resumed and discussed; when, on motion of Mr. Hilliard, it was

Resolved, That the Secretary be instructed to report on the scheme submitted by Mr. Harmon for the improvement of architecture, exhibiting such features of the scheme as may be found to be within the plan of organization adopted for the operations of the Smithsonian Institution.

The Secretary presented to the board a list of the names of gentlemen who had undertaken the labor and responsibility of examining memoirs and propositions submitted to the institution.

Whereupon, on motion of Mr. Davis, it was

Resolved, That the Secretary be requested to address a letter to each of the gentlemen named, and convey to them the thanks of the Board of Regents for their assistance in carrying on the operations of the institution.

Mr. Davis presented a communication from Charles B. Wells, esq., relative to a series of archaeological researches made by himself in Peru, and requesting the assistance of the institution in their publication, which was referred to the Secretary.

A letter was presented from Daniel Peirce, detailing a method of educating the Indian tribes, which was also referred to the Secretary.

The Secretary called the attention of the board to the engagement existing between the institution and Hiram Powers, relative to the purchase of his statue of the Greek Slave, which subject was referred to the Secretary, with the understanding that he would communicate with Mr. Powers, or his agent, for the purpose of effecting an alteration in the terms of the contract.

The Secretary made a verbal report, on the progress made by Henry Stevens in the compilation of the "Bibliographia Americana."

He also presented a letter from Pierre Margry, of Paris, requesting the assistance of the institution to enable him to publish his researches upon the history of the ancient French colonies in North America; which letter was referred to the Secretary, for a reply, in accordance with the rules adopted by the board.

On motion of Mr. Davis, it was

Resolved, That the board adjourn, to meet on Saturday next at 10 o'clock a. m.

Whereupon the board adjourned.

FEBRUARY 2, 1850.

The following gentlemen attended, agreeably to adjournment, viz: Messrs. Davis, Fitch, Seaton.

No quorum being present, the meeting adjourned to the 9th inst., at 10 o'clock a. m.

FEBRUARY 9, 1850.

The Board of Regents met, agreeably to adjournment, at 11 o'clock a. m.

Present: Messrs. Fillmore, Colcock, Davis, Fitch, Hilliard, Pearce, and Seaton.

The Chancellor took the chair, and the proceedings of the last meeting were read.

A verbal report on the proposition of Mr. Harmon, of Ohio, for the improvement of architecture in the United States, was made by the Secretary, accompanied by a synopsis of the plan. He stated that he considered no part of Mr. Harmon's plan to be absolutely at variance with the programme of organization, but he was not clear with regard to its practical application, and the propriety of its adoption. It might, however, be submitted to the public through the Regents' report to Congress.

The following is a synopsis of the plan referred to:

PART FIRST.

1. Invite architects to send to the institution designs for building.
2. Refer these to a commission, comprising at least one practical architect.
3. The examiners to select from the number submitted, those of a certain degree of merit, to be honored with a place in the gallery.
4. The accepted designs to be re-executed, in a uniform and attractive style of art, before being placed in the gallery, and undersigned by the name of the architect.

PART SECOND.

1. Invite building committees, or others charged with the erection of public buildings, to send to the Smithsonian Institution, specifications, limit of cost, and amount of premium offered.
2. The Secretary to advertise, in the usual form, for designs, and to refer them to a commission of competent judges, one of whom to be a practical architect.
3. From among the designs submitted, the commissioners to select a few of the best and return them to the Building Committee, stating their preference, if any.
4. The plans of extraordinary merit, selected from among the designs submitted, shall be entitled to a place in the prize gallery.
5. The expense of the commission for making the estimate, and advertising, shall be paid from a percentage on premiums accompanying the specifications.

6. A person well skilled in practical building to be employed, and the designs adopted, to be submitted to him for a correct estimate of the cost.

This synopsis being considered, the first article of the first part was adopted, after being amended by Mr. Davis, to read as follows:

Resolved, That architects be invited to send in designs for buildings, and that notice be given that models of ancient or modern architecture will be received by the Smithsonian Institution, and that such designs or models, at the discretion of the Regents, will be placed in the gallery of art.

The second and third articles were struck out; and, on motion of Mr. Fitch, it was

Resolved, That the fourth article be referred to a committee consisting of the Secretary and Mr. Seaton, with instructions to ascertain from Mr.

Harmon what is his plan of re-executing the architectural drawings, and the probable cost; and that the remainder of the synopsis be laid upon the table.

The Secretary laid before the board the resignation of General J. G. Totten as a member of the Building Committee, which was accepted.

The board proceeded to fill the vacancy, and Mr. Davis was elected.

A map of the public grounds west of the Capitol was laid before the Regents, and their attention called to the recommendation of a general plan for improving the mall.

The Secretary directed the attention of the board to a part of the building contract which required elucidation, and requested that they would express their opinion as to the sum to be paid annually to the contractor: whereupon the following preamble and resolution, offered by Mr. Fillmore, (Mr. Pearce being in the chair,) were adopted:

The Board of Regents having examined the building contract, for the purpose of determining its true construction:

Resolved, That, in the opinion of this board, the contractor is only entitled, in each year, to forty-one thousand dollars for work done during that year, deducting therefrom 15 per cent., which is to be paid him at the end of the five years, with 6 per cent. interest.

The Secretary presented a report from Professor C. C. Jewett, on the subject of *copyright*, which was referred to a committee consisting of Messrs. Davis, Mason, and Pearce.

The board then adjourned to the 23d instant, at 10 o'clock a. m.

FEBRUARY 23, 1850.

The Board of Regents met this day.

Present: Messrs. Fillmore, Bache, Fitch, and Seaton.

A quorum not being present, it was agreed to adjourn to Saturday, March 2, 1850.

MARCH 2, 1850.

The Board of Regents met this morning at 10 o'clock, in the Smithsonian building.

Present: Messrs. Bache, Colcock, Davis, Fitch, Hilliard, Mason, Pearce, and Seaton.

In the absence of the Chancellor, Mr. Seaton was called to the chair.

The proceedings of the last meeting being read, the committee on Mr. Harmon's plans of architectural drawings made a report, which was read and adopted.

Mr. Davis moved that the further consideration of the fourth article of Mr. Harmon's synopsis be indefinitely postponed, which was carried.

Mr. Davis then offered the following resolution, which was adopted:

Resolved, That, although the board do not deem it expedient to adopt Mr. Harmon's plan of executing architectural drawings; yet, for the purpose of placing in the institution a specimen of a peculiar art of drawing architectural designs, the Executive Committee be authorized to engage Mr. Harmon to execute the elevation of the Smithsonian Institution in his peculiar style, with a view to placing it in the institution, if the Regents shall, upon examination, approve of so disposing of it.

The Secretary brought before the board the subject of an accident which had happened since the last meeting, in the unfinished part of the building. He stated that, at about 6 o'clock p. m., on Tuesday, the 26th ult., a portion of the interior framing and floors of part of the main building, intended to contain the museum of apparatus, fell down into the basement. He had himself just before left the ground; but as soon as he heard of the occurrence he returned to the building, and after ascertaining the character of the accident, he addressed a letter to the architect, in New York, requiring his immediate attendance. He next gave directions that the part of the building containing the fallen timbers should be closed, and that everything should remain in the same condition until the arrival of the architect. Mr. Renwick reached Washington on Thursday morning, February 28. Immediately afterwards, a meeting of the Building Committee was called, at which the state of the work was examined, and a request made that the architect, superintendent, and contractor should each furnish a report on the cause of the accident.

These reports were presented to the board, and the following resolution, offered by Mr. Fitch, was adopted:

Resolved, That the Building Committee be requested to take under consideration the reports of the architect, superintendent, and contractor, on the subject of the late accident; that they associate with them Professor Bache, General Totten, the Secretary of the institution, and some competent and entirely impartial architect or architects; that they make a survey of the whole building, report the manner, faithfulness, and security in which the building contract has hitherto been executed, and upon the plan most proper in their estimation to repair the damages and finish that portion of the building in which the accident happened, and other unfinished portions thereof.

The board then adjourned, to meet again at the call of the Secretary.

APRIL 20, 1850.

The Board of Regents held a meeting this day, at the call of the Secretary, at 10 o'clock a. m., in the Vice President's room at the Capitol.

Present: Messrs. Bache, Davis, Fillmore, Fitch, Mason, and Seaton.

The Chancellor being in the chair, the proceedings of the last meeting were read.

The Secretary made a communication from Mr. Harmon, in which he requested to substitute a view of another building for that of the Smithsonian Institution in making the drawing, in his style, for the gallery of art.

On motion of Mr. Davis, the subject was laid on the table.

The committee, on the part of the Regents, charged with the examination of the building, consisting of the Building Committee, together with Messrs. Bache, Totten, and the Secretary, made a report, including the report of the commission of architects appointed to examine the building; also the remarks of James Renwick, jr., architect, upon the same.

On motion of Mr. Fitch,

Resolved, That the report of the committee on the building, and the accompanying documents, be recommitted for such further action as may be deemed necessary. Also,

Resolved, That the Building Committee be directed to take legal advice as to the power possessed by the Regents, under the contract, and the

course to be pursued should it be found necessary to declare it void; and that notice thereof be given to the contractor.

On motion of Mr. Bache,

Resolved, That the thanks of the Board of Regents be transmitted to Hon. E. G. Squier, esq., United States chargé d'affaires at Guatemala, for the gift of aboriginal relics recently made by him to the Smithsonian Institution.

On motion, the board adjourned, to meet at the call of the Secretary.

JUNE 1, 1850.

The Board of Regents met this day, at the call of the Secretary, at 11 o'clock a. m., in the Smithsonian building.

Present: Messrs. Fillmore, Fitch, Hilliard, Pearce, Seaton, and Totten.

The Chancellor took the chair, and the proceedings of the last meeting were read.

The Secretary laid before the board a proposition from Francis Markoe, esq., relative to the deposit in the Smithsonian building of his cabinet of minerals, with a view to their future purchase.

Whereupon, on motion of Mr. Colcock, it was

Resolved, That the board decline the proposition of accepting the deposit with the view to a future purchase.

The Secretary stated that the portrait of Smithson, which was ordered to be purchased at a previous meeting, had been received from England; and also, that five volumes of an Encyclopedia, formerly the property of James Smithson, had been purchased through the Hon. Abbott Lawrence.

On motion of Mr. Davis, it was

Resolved, That the thanks of the board be returned to the Hon. Abbott Lawrence, for the attention he has given to the interests of the institution abroad.

On motion of Mr. Seaton, it was

Resolved, That the Secretary and chairman of the Executive Committee be appointed a committee, whose duty it shall be to report a system of keeping and disbursing the funds of the institution.

The Secretary next brought before the board a proposition to ask Congress to receive from the institute \$150,000, to be funded as an irredeemable 6 per cent. stock, to be added to the principal of the Smithsonian bequest.

The following resolutions in reference to this, offered by Mr. Seaton, were adopted:

Resolved, That the Chancellor and Secretary be authorized to sell \$200,000 of stock of accrued interest, or any part thereof, not less than \$150,000, the proceeds to be deposited to the credit of the Chancellor and Secretary, subject to be drawn at any time, with Coreoran & Riggs, at not less than 4 per cent., provided they shall give security therefor, in United States stock.

Resolved, That whatever the premium on the above stock, when sold, shall amount to, it be deposited, subject to be drawn for the current expenses of the institution, on requisition in the usual form.

Resolved, That it is expedient to enlarge the permanent fund of this institution, by the investment of such sums, not exceeding \$200,000, as may have been or shall be received for accrued interests, or otherwise, in

addition to the principal sum of the Smithsonian bequest, augmenting the principal sum to that amount; and that application be made to Congress to receive such sums, not exceeding \$200,000, as may have been or shall be received for accrued interest, or otherwise, into the United States treasury, upon the same terms on which the original bequest has been received.

On motion of Mr. Pearce,

Resolved, That the Secretary be requested to communicate a copy of this resolution to Congress, and to request that provision be made by law, in accordance therewith.

The Secretary next brought forward the subject of the contract for the building. The letter of J. M. Carlisle, esq., the counsel employed to give an opinion of it, was read.

On motion of General Totten, it was

Resolved, That the committee on the building be authorized to negotiate a compromise with the contractor relative to the defective work and materials in the Smithsonian building, and also with regard to a modification of the contract, subject to the approval of the Board of Regents at their next meeting.

The Secretary laid before the board a volume of magnetical and meteorological observations, made at Toronto, Canada, and presented to the institution by the British government. The board being informed that the duration of the Toronto Observatory is limited by law, on motion of Mr. Seaton, it was

Resolved, That the Chancellor and Secretary be requested to acknowledge the receipt of the volume, with the expression of the hope of this board that Her Majesty's government may find it expedient to continue an institution of such utility to science.

On motion, the board adjourned, to meet at the call of the Secretary.

JULY 3, 1850.

The board met this day, at the call of the Secretary, in the Smithsonian building, at 9 a. m.

Present: Messrs. Fillmore, Colcock, Davis, Fitch, Hilliard, Mason, and Pearce.

The Chancellor took the chair.

Mr. Lenox, elected mayor of Washington, and ex-officio Regent of the Smithsonian Institution, appeared and took his seat.

The journal of proceedings of the last meeting was read and approved.

The Secretary presented the final report of the committee charged with the examination of the building, which was read as follows:

Final report of the Committee of the Regents charged with the examination of the building.

Under the resolutions of March 2 and of April 20, 1850, offered by Mr. Fitch, and also the resolution of June 1, 1850, offered by General Totten, the committee charged with examinations relative to the building submit the following report:

In accordance with the first resolution of Mr. Fitch, the committee associated with themselves three disinterested architects, viz: Col. Wil-

fiam Turnbull, of the United States topographical engineers; Edward B. White, esq., of Charleston, South Carolina; and John R. Niernsee, esq., of Baltimore, Maryland. These gentlemen were highly recommended as practical architects and engineers, of established reputation, and the committee have full confidence in their experience, judgment and integrity.

The committee are indebted to the Hon. Alexander Evans, of Maryland, for an examination of the building, with reference to a comparison of the different reports; and to Mr. Joel Downer, for an additional inspection and opinion as to the character of the timber and wood-work. In accordance with the second resolution of Mr. Fitch, they have also taken legal advice as to several points of the contract.

After a careful study of the reports of the contractor, superintendent, Mr. Renwick, the commission of architects, and of Mr. Evans, also the written opinion of their legal adviser, the committee have unanimously arrived at the following conclusions, which they respectfully submit for the consideration and action of the board.

1. That the workmanship of the cut-stone of the exterior is good, and the masonry generally, though in some respects not of the best quality, is of a passable character with reference to the terms of the contract.

2. That the interior of the main building is defective in the kind of materials originally adopted, and to a considerable degree in the quality of the materials employed. These consist principally of wood, and are not of a proper character for a building intended to contain valuable deposits, many of which will be donations to the institution, presented with the implied condition that they are to be properly secured against danger from fire. This mode of construction was probably adopted by the original Building Committee, in order to lessen the cost of the edifice, and to bring it within the sum appropriated by the board.

3. Although the committee are anxious to save the accrued interest, and to devote it to objects more in accordance with the spirit of the bequest than the erection of a costly building; yet, they would recommend that the interior work of the centre building, as now existing, be removed, and that there be substituted for it a fire-proof structure, in accordance with the plan recommended in the reports of Mr. Renwick and of the commission of architects.

4. The completion of the building on this plan, according to the estimate of the commission, requires an additional outlay of about \$44,000. To meet this additional expense, the committee recommend the adoption of the suggestion of their chairman, Col. Davis, that the exterior of the building and the interior of the towers be completed in accordance with the plan, and within the time specified by the contract, and that the remainder of the interior be finished agreeably to the new plan, in the course of a number of years, and in such portions as can be paid for out of the annual interest of the Smithsonian fund, not otherwise appropriated. The object of this part of the proposition is to prevent the derangement of the plan of finance originally proposed by Dr. Bache, and adopted by the Board of Regents, viz: of saving out of the accrued and accruing interest, after paying for the building, the sum of \$150,000, to be added to the principal.

5. By the addendum to the contract, the Regents have the power of stopping the building at any stage of its progress, on paying the contract-*or pro rata* for the work done, according to the prices specified in the con-

tract, and allowing for reasonable damages, if the circumstances require the payment of them. The estimates in this case are to be made by the architect of the institution, or other architects selected by the Regents. But with reference to the quality of the work which has been done, it is the opinion of the legal adviser of the committee that the decision of the architect of the building is final, both with regard to the Regents and the contractor.

6. In accordance with the forementioned stipulations of the contract, the committee have requested Mr. Renwick to furnish an estimate *pro rata* for completing the whole exterior of the building, and the interior of the towers, making deductions for materials and workmanship which he would have condemned, had the building been completed according to the original plan. The following is the decision of the architect, which has been agreed to by the contractor, with the understanding that nothing is to be paid him on account of profit on work omitted by the proposed change, viz:

For finishing the whole exterior of the building, all the interior rooms of the towers and of the wings, the sum of - \$185,154

7. The committee recommend to the Board of Regents that they agree to this proposition, and that a resolution be adopted directing the contractor to proceed with the work in accordance therewith. In recommending this course to the board, the committee act in conformity with the advice of two of the commission of architects, viz: Mr. E. B. White and Mr. J. R. Niernsee, who undertook the examination in detail of the parts of the building, and gave an estimate as the basis of an equitable settlement.

8. By adopting the above sum of \$185,154, as the amount to be paid to the contractor, Mr. Renwick gives the following estimate of the cost of finishing the building in accordance with the fire-proof plan, viz:

Amount of proposed contract	-	-	-	-	\$185,154
Expense of fire-proofing the centre building according to plans and estimates of the architects	-	-	-	-	44,000
Plastering centre building,	}	Expenses common to both plans.	{	\$8,000	
Gallery fronts,				2,000	
Staircase of Library and Museum,				425	
Furniture of do. do.				4,700	
					15,125
Extra cartage	-	-	-	-	200
Materials now on the ground, but which may not be used	-	-	-	-	1,000

Total expense of the building, including fire proofing - - 245,479

9. The original contract, with the addition made to it by direction of the Building Committee, is - \$209,810
Add the estimate of fire-proofing - - - 44,000

Thus we have for the cost of the building, according to the estimate of the commission - - - 253,810

NOTE.—The foregoing estimates are exclusive of the salaries of the architect and superintendent; also of the cost of the improvement of the grounds and part of the furniture.

This last sum is greater than the preceding, by \$8,331. The difference, according to the statement of Mr. Renwick, is due to the various deductions he has made on account of defective materials, imperfect workmanship, and changes in the plan.

In conclusion, the committee are fully of opinion—and in this they are sustained by the commission of architects—that, by adopting the plan of fire-proofing proposed by Mr. Renwick, and the proposition of the contractor, the building will be rendered safe and durable, at a very reasonable cost, considering the amount of work which has been bestowed upon it.

The committee do not consider it necessary to offer any remarks on the cause of the accident which led to these investigations. If these recommendations be adopted, the whole structure of the interior of the main building, in which the accident occurred, will be exchanged for one more in accordance with the permanence and utility of the edifice; and in this case they will consider the accident as a fortunate event.

All of which is respectfully submitted.

JEFFERSON DAVIS, *Chairman.*

W. W. SEATON.

H. W. HILLIARD,

JOS. G. TOTTEN.

ALEX. D. BACHE.

JOSEPH HENRY.

On motion of Mr. Pearce, it was

Resolved, That the report of the committee of the Board of Regents charged with the examination of the building, presented this day, be accepted; and that the Building Committee be directed to proceed with the work, in accordance with the recommendation thereof.

The following resolution, offered by Mr. Davis and amended by Mr. Fitch, was adopted:

Resolved, That the Executive Committee be authorized to advance to the contractor within the year ending 19th March, 1851, in addition to the sum which he is now allowed to expend upon the building within the aforesaid year, the sum of \$17,980, in proportion to work done in addition to what would otherwise have been done, and on condition of his paying interest at the rate of six per cent. per annum upon the said advance from the time at which he receives it to March 19, 1851.

The committee, consisting of the Secretary and chairman of the Executive Committee, to whom was referred a resolution directing them to report a system of keeping and disbursing the moneys of the institution, reported the following resolutions; which were read, and on motion adopted:

Resolved, That the Secretary be authorized to appoint an assistant, to act as treasurer, to take charge of the funds for the current expenses of the institution, who shall give security for the safekeeping of all money belonging to the institution which shall come into his possession:

That the funds before mentioned be deposited, until otherwise ordered, with Messrs. Corcoran and Riggs, to the credit of the treasurer of the institution:

That all bills presented for payment shall be audited and certified by the Secretary, on whose order the treasurer shall pay them:

That the treasurer report to the Secretary, monthly, all payments made by him during the preceding month:

That all the monthly accounts be examined and certified by the Executive Committee quarterly.

That the account-books be kept in the Smithsonian building, so that the Secretary and Executive Committee may have ready access to them.

The Secretary then nominated Mr. Seaton as a suitable person to perform the duties of treasurer, and the nomination was unanimously confirmed by the board.

The Secretary stated to the board that Mr. Seaton would accept the office of treasurer, but would not consent to receive any compensation for his services.

The following resolution, offered by Mr. Mason, was unanimously adopted:

Resolved, That the thanks of the board be, and they are hereby, tendered to the Hon. W. W. Seaton, late mayor of the city of Washington and ex-officio Regent of the Smithsonian Institution, for his able and valuable services as a member of the board, now terminated by the expiration of his term of office as mayor of Washington.

On motion, the board adjourned, to meet on Friday morning, 5th instant, at 9a. m.

JULY 5, 1850.

The Board of Regents held a meeting this day, at 9 a. m., in the east wing of the Smithsonian building.

Present: Messrs. Fillmore, Colcock, Davis, Fitch, and Lenox.

The Secretary stated that vacancies in two committees of the board were occasioned by the retirement of Mr. Seaton; whereupon, on motion of Mr. Fitch, it was

Resolved, That General Totten be appointed a member of the Executive Committee.

Also, on motion of Mr. Davis, it was

Resolved, That Mr. Lenox be appointed a member of the Building Committee.

The Secretary stated that, in order to the development of the plans of the institution, it was necessary that additional assistants should be appointed. With the officers now engaged, little more could be done than to attend to the general correspondence, which now extends to every part of the world, and the details of business, which have been continually increasing. The labor of reading manuscripts and attending to the press, would almost occupy the time of one individual. He therefore requested that he be allowed to appoint an assistant secretary in the department of natural history, to take charge of the museum and aid in the publications, &c.

On motion of Mr. Davis, it was

Resolved, That the Secretary be authorized to appoint an assistant secretary in the department of natural history, to take charge of the museum, and to render such other assistance as the Secretary may require, at a salary of fifteen hundred dollars per annum.

The Secretary thereupon appointed Professor Spencer F. Baird the foregoing resolution; and, on motion, the board approved "ment.

The Secretary then stated that Dr. Edward Foreman had been engaged during the past year as a general assistant; that he had been elected professor of chemistry in the National Medical College of this city, the duties of which, however, did not materially interfere with his labors in the Smithsonian Institution; and the Secretary requested that his connexion with the institution might be placed on a more permanent basis.

Whereupon, on motion of Mr. Fitch, it was

Resolved, That the Secretary be authorized to appoint a general assistant, at a salary of twelve hundred dollars per annum.

The Secretary thereupon, under the foregoing resolution, appointed Dr. Edward Foreman; and, on motion, the board approved the appointment.

The following resolution, offered by Mr. Colcock, was adopted:

Resolved, That a sum not exceeding twenty thousand dollars be appropriated for the current expenses of this year; the objects of the expenditure to be those designated in the programme of the institution, and the allowance to each to be fixed by the Executive Committee.

The Secretary presented to the board a plan, by Professor Jewett, for stereotyping or electrotyping catalogues of libraries, *by titles*, in a uniform style, and of forming a general stereotype catalogue of the public libraries of the United States. The Secretary stated that this was a proposition which appeared to him of great importance in carrying out the objects of the institution, and in rendering available the aids to literary labor now in our country. He suggested that the proper course would be to refer it to the Secretary and Executive Committee, to be referred by them to a commission of literary gentlemen for examination.

On motion, the subject was referred to the Secretary and Executive Committee.

On motion, the board adjourned, to meet again at the call of the Secretary.

Meeting of the Establishment of the Smithsonian Institution.

Since the adjournment of the board, a meeting of the establishment, or of the Smithsonian Institution proper, was called by order of the President of the United States, and in compliance with the suggestion of the Board of Regents. The principal object of the meeting was the election of a number of honorary members. The following is a copy of the record of this meeting:

AUGUST 1, 1849.

A meeting of the establishment of the Smithsonian Institution was held this day, at 5 o'clock p. m., in the eastern range of the Smithsonian building.

Present: Zachary Taylor, President of the United States, and *ex officio* President of the institution.

John M. Clayton, Secretary of State.

Wm. M. Meredith, Secretary of the Treasury.

Jacob Collamer, Postmaster General.

Thomas Ewbank, Commissioner of Patents.

W. W. Seaton, mayor of Washington.

Joseph Henry, Secretary of the Smithsonian Institution.

The President took the chair.

This being the first meeting of the establishment, the Secretary gave an account of the institution, of the plan of organization adopted by the Board of Regents, and of the progress made in carrying the several parts into operation.

The chairman of the Executive Committee gave to the meeting an account of the disbursements of the institution and the state of its funds.

The following gentlemen having been recommended by the Regents and officers of the Institution, and being duly considered by this meeting, were, on motion of Mr. Meredith, unanimously elected honorary members of the Smithsonian Institution, viz:

Dr. Robert Hare, of Philadelphia.

Albert Gallatin, of New York.

Dr. Benjamin Silliman, of Connecticut.

Washington Irving, of New York.

On motion of Mr. Clayton, it was

Resolved, That a committee of three be appointed to draught and report by-laws and regulations for the future meetings of the establishment.

Whereupon, the President appointed Mr. Clayton, Mr. Meredith, and Mr. Seaton, the committee.

On motion of Mr. Collamer, the Secretary of the institution was added to the said committee.

On motion, the meeting then adjourned, to meet again on the call of the President.

Letters have been received from the gentlemen elected, signifying their acceptance of the appointment, acknowledging the honor conferred upon them, and stating their willingness to assist in advancing the objects of the institution.

Since the meeting, one of the distinguished gentlemen chosen as honorary members of the institution has departed this life, full of years and honor—namely, the Hon. Albert Gallatin—distinguished for his attainments in several branches of science, and his additions to the sum of human knowledge. He took a lively interest in the establishment of this institution, and was particularly active in furthering the publication of the first volume of its Contributions. Though we lament his departure, it is a matter of satisfaction that he lived to receive the testimony of the highest honor which the Smithsonian Institution could bestow upon his worth.

REPORT OF THE EXECUTIVE COMMITTEE.

To the Board of Regents of the Smithsonian Institution :

The Executive Committee submit to the board the following report of the expenditures, state of finance, &c., of the Smithsonian Institution:

The whole amount of the Smithsonian bequest received into the United States treasury was \$515,169. The interest which had accrued on the same up to July 1, 1846, was \$242,129, making in all \$757,298.

The Regents were authorized to expend on the building the \$242,129 which had accrued in interest, together with such portions of interest on the original bequest as might remain unexpended in any year. They concluded, however, to limit the whole expenditure on the building and the grounds to a sum not exceeding \$250,000; and, in order that this might not exhaust the accrued interest, it was resolved that this expenditure should not be made at once, but in the course of five years, and that in the mean time the sum of \$242,000, authorized to be expended on the building, should be invested so as to yield an interest which might in part serve to defray the expense of the building. To carry out this plan, the \$242,000, with the addition of accrued interest sufficient to make up the sum of \$250,000, were invested in treasury notes; and in order that the institution might not be a loser by a possible depreciation of these notes, the contracts for the building were made payable in them at par value or in specie, at the option of the Regents. Up to this time, only \$50,000 of these notes have been disposed of. They have thus been made to yield a constant interest, besides increasing in value on account of the rise in government securities. The whole expenditure since the commencement of operations to the present time, is \$199,157 21; the whole of which has been made from the accruing interest on the fund and the sale of \$50,000 of notes above mentioned.

The following is a synopsis of the present state of the finances of the institution:

Amount of Smithson's bequest	-	-	-	\$515,169 00
Interest due thereon to July 1, 1846	-	-	-	242,129 00
				<hr/> 757,298 00 <hr/>
Balance on hand January 1, 1850	-	-	-	\$8,277 35
Treasury notes funded	-	-	-	200,000 00
Permanent fund	-	-	-	515,169 00
Present rate of United States loan, 112 per cent.; there- fore add	-	-	-	24,000 00
				<hr/> 747,446 35 <hr/>
From this should be deducted, for accounts not rendered	-	-	-	6,000 00
				<hr/> 741,446 35 <hr/>

The whole amount paid on the building and grounds up to this time is \$134,876 21.

From this it appears that, after paying for more than one-half of the building, carrying on the operations of the institution, collecting a library and philosophical apparatus, the sum originally intrusted to the Regents has only been diminished by less than \$16,000. The object of this scheme of finance is to increase the original fund, which, though sufficient to establish a library and a museum, is found inadequate to meet the demands which result from the comprehensive plan of organization which has been adopted. The result has thus far been so successful,

that there can now be no doubt that, if the same plan be continued until the end of the five years, and the funds do not greatly depreciate, there will remain the sum of \$150,000 in accrued interest to add to the principal. To secure this desirable end without the possibility of failure, it may be now advisable to petition Congress to receive from the Regents the sum of \$150,000, and place it with the original principal sum, never to be expended, and to complete the building out of the remaining funded notes and the accruing interest.

W. W. SEATON,
ALEXANDER D. BACHE,
JAS. ALFRED PEARCE.

REPORT OF THE BUILDING COMMITTEE.

WASHINGTON, *January 2, 1850.*

The Building Committee have the honor to report as follows:

In the great desire of the contractor to get the whole Smithsonian building under roof before winter, the progress thereon during the year just elapsed has been rapid—that object having been fully attained before the occurrence of severe weather. The Building Committee deemed this result so important for the protection of a large amount of masonry and wood work, that they participated in this desire of the contractor; and did not hesitate to permit an expenditure on the building somewhat larger than the year would have been entitled to under the project of extending the process of construction through a period of five years. It must not, however, be supposed that the expenditures have exceeded the portion of the building fund liable to expenditure under existing resolutions. The portion of this fund thus liable up to the 19th of March next, reckoning from the beginning, is \$146,000; the aggregate expenditure on building and grounds now falls short of that sum \$10,678 83—which last sum must therefore be the limit of expenditure in the interim—that is to say, from the 1st of January to the 19th March, 1850.

Should the Board of Regents leave the project of a five-years course of construction undisturbed, it will be necessary to lessen, for the next two years, the rate of expenditure on the building. On the other hand, should circumstances lead the board to desire an earlier completion than has heretofore been contemplated, the advanced state of the building resulting from the labors of the past year will be in lucky accordance with such change of policy.

Besides carrying up the walls of the main cell of the building, and finishing its roof, the central front towers and the four corner towers of the main building are carried up as high as the walls of the main building—the central rear tower being 30 feet high.

The architect reports that the stones for the unfinished portions of the building are nearly all quarried; and that the stone-cutting for the campanile south, and two north towers, is nearly completed.

The east and west wings, and ranges, are finished, except some few matters of detail, and are ready for occupation. The workmen are now fitting the west wing with bookcases, for a temporary library; and the west connecting range, for uses connected with the library.

During the past year, with the concurrence of the Secretary of the institution, and under the advice of the architect, the committee have

caused the following alterations to be made in the interior arrangement of the building:

The original lecture-room, in the east wing, proving to be entirely too small, the adjoining apparatus and laboratory rooms were removed, and the whole wing formed into one large lecture-room, provided with seats for one thousand persons. By this arrangement, the apparatus rooms in the east connecting range are in close proximity with the lecturer's table; with which, also, direct and easy communication will be had from the large apparatus museum mentioned in the sequel.

This lecture-room, thus enlarged, being capable of containing as many persons as the lecture-room which was originally designed to occupy about half the lower story of the main building, the latter has been dispensed with, and the space thus obtained divided—giving a room of 65×50 feet as a depository of physical apparatus, and throwing the remaining space into the library.

Besides a manifest gain of useful room by this alteration, it tends to security against fire—since the lecture-room, and the researches and experiments connected with it, will be in a separate wing, easily cut off from all the other parts of the structure, by fire-proof doors of iron.

Another change of internal arrangement is as follows: The two stairways, that in the original plan were carried up between the middle north front towers and the main building, have been dispensed with, and the space they occupied added to the library; as also the central hall; and, as before said, a portion of the former lecture-room. By these several alterations, the library has been nearly doubled in area, and a spacious museum obtained for physical apparatus. The central staircase of the north front will now be carried up within one of the front towers.

The changes above mentioned in the interior of the building will be accomplished, on agreement with the contractor, at an extra cost of \$100.

It must be considered, however, that the large addition to the library room will require a large addition to the library equipment and furniture. But as it must be many years before the contents of the library can spread beyond its limits, as first planned, and provided for in the contract, the committee would consider it unwise now to incur any portion of this considerable expense.

A clere story to the long upper room, or museum, of the centre building, has been adopted by the committee. The architect states that this was originally contemplated by him, and was explained at the time the contract was made. The committee understand that the adoption of the recommendation was left to further consideration. They were satisfied, however, that it was a necessary modification; the great length of this room—nearly 200 feet—being out of all proportion to the low pitch of 27 feet, originally contracted for. The additional amount for which Mr. Cameron, the contractor, engages to carry out this improvement, is \$2,350.

No other alterations have been made in the building, and the committee think no others will be needed: none, at least, that will involve much expense.

The arrangement of the west wing and range for a temporary library and reading-room, has entailed an expense of \$372, which should properly, perhaps, be charged to the library fund. It has, however, been comprised in the following statement of expenditures:

The total amount expended on the building, and on the fencing of the lot, including superintendence and all incidental expenses connected therewith, up to 1st December, 1847, was, as then stated - - - - - \$25,692 67

The amount expended on the building and its appurtenances, from the 1st of December, 1847, to the 31st of December, 1848, was, as stated in the last annual report, 53,931 71

Total expended on the building, &c., up to the 31st December, 1848 - - - - - 78,937 41

The expenditures on the building and its appurtenances during the year 1849 have been as follows:

Paid Mr. Cameron, contractor for the building, \$50,300 00

Paid Mr. Renwick, architect, as salary - 1,800 00

Paid Mr. Renwick for travelling expenses - 266 15

Paid Mr. Renwick for expenses of architect's office, including incidental expenses of the same, stationery, pay of draughtsman, &c., 268 25

Paid Mr. Brown, as superintendent, one year's salary - - - - - 750 00

Paid Messrs. Culver & Co. for three furnaces, 786 11

Paid Mr. Barrows for one furnace - - - 349 52

Paid Mr. Cassiday for three scrapers - - 3 75

Paid Mr. Beckert for recoloring east wing - 50 00

Paid Mr. Buckingham for plumbing - - 12 00

For additional furniture of library, - \$60 47

“ “ “ 50 75

“ “ “ 25 00

“ “ “ 176 25

“ “ “ 319 62

Paid also for temporary library furniture - - - - - 372 00

1,004 09

Paid Mr. Cameron for extra work on building - - - - - 21 50

Do do do 31 62

53 12

Paid Mr. Cameron for coal - - - 39 72

For improvement of grounds—

Mr. Douglass for trees, &c. - 520 00

Mr. S. Bryan for plank road - 62 00

Mr. Cameron, for road-making - - - - 45 43

“ “ 56 12

101 55

683 55

Paid for hack-hire for Building Committee - 17 50

56,383 76

78,937 41

Amount expended on the building and its appurtenances up to the 31st December, 1848	-	-	-	\$78,937 41
Amount expended on the same during the year 1849	-	-	-	56,383 76
Total amount expended on the same up to the end of the year 1849	-	-	-	<u>135,321 17</u>

At the annual meeting in December, 1847, it was resolved that there should be considered applicable to the building and grounds (including preceding expenditures) up to the 19th day of March, 1848, the sum of	-	\$42,000 00	
And for the year ending March 19, 1849, the further sum of	-	52,000 00	
And for the year ending March 19, 1850, the further sum of	-	52,000 00	
		<u>\$146,000 00</u>	
But, as shown above, the total expenditures to the end of 1849 has been	-	-	<u>135,321 17</u>

Leaving, of the building fund, a balance applicable between the 1st of January and 19th of March, 1850, of	-	-	<u>10,678 83</u>
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The furnaces that have been set up in the building for heating the rooms have not proved satisfactory to the architect, nor to the persons who have occupied some of the rooms. He reports that they do not diffuse the heat equally throughout the rooms—that while some apartments are highly heated, others cannot be made comfortably warm; owing, as he thinks, to the difficulty in conveying the heated air horizontally. He also objects to the number of fires which are necessary in the use of furnaces, and has advised that the other portions of the building should be warmed with steam. The committee have requested the architect to obtain full and definite information of all circumstances involved in the use of steam as suggested by him, and to furnish a report such as will enable a judgment to be formed of its adaptation to our purposes, and of its relative cost. The Secretary of the institution is also engaged in some inquiries of the same nature.

The work entitled “Hints on Public Architecture,” authorized to be published by the Building Committee, has been issued, and is submitted to the inspection of the Regents.

The amount expended being somewhat beyond the amount appropriated by the Board of Regents, the committee requested an explanation from the Hon. R. D. Owen, who had superintended the publication of the work. That gentleman states that the landscapes of the lithographs at first executed were so badly done as to be unfit for the press; and that though the lithographer who engraved the building was the only one who would undertake the architectural portion, he did not prove sufficiently experienced in landscape drawing, to render that part of the plates either artistical or effective—this portion was, therefore, re-drawn by another lithographer, at an additional expense of \$80: that the remainder of the additional expense was incurred by the necessity of altering the size and form of many of the wood-cuts, in order to enable them to come properly

into the letter-press; that this was an unforeseen expense, and could not have been ascertained before the work was about being set up in the printing office: that he was compelled to make the alterations in the cuts, or to destroy the beauty of the pages of the book. These additions to the cost of the work having materially enhanced its beauty, the committee hope the Board of Regents will sanction the course of the Committee in paying the extra charges.

The committee now present a statement of the expenditures as yet incurred, or pledged on the building and grounds, and chargeable to the building fund of \$250,000, heretofore set apart.

Total amount appropriated for building and grounds	-	\$250,000
Amount of Mr. Cameron's contract	-	\$205,250 00
Architect's salary for five years	-	9,000 00
Superintendents and draughtsmen for 5 years,	-	5,000 00
Incidental expenses allowed architect	-	2,000 00
Facing areas with cut-stone	-	480 00
Building battlements to cloisters	-	200 00
Additional apparatus cases	-	200 00
Hedging and planting	-	1,050 00
Furnaces already put up	-	1,135 63
Addition of clere-story to museum	-	2,350 00
Alteration of stairway, &c.	-	100 00
Chimneys added to the east wing	-	400 00
Sodding ground near building	-	100 00
Heating central building with steam, including cellar for boiler and as a coal vault—		
approximate estimate of the architect	-	3,200 00
Additional furniture and incidental expenses—		
say	-	1,000 00
		<hr/> 231,465 63

Leaving, as applicable to unforeseen expenses connected with the building or grounds, the sum of - - - 18,544 37

A contract made with Mr. John Douglass, jr., for planting and cultivating trees and shrubs within the Smithsonian grounds, and another with the same person for planting and cultivating hedges along the margin of the same, not having been complied with on his part, have been annulled by the committee. The committee are sorry to say, that from these failures the year just past may be considered as almost wholly lost, as respects the establishment of trees or hedges. They look, however, for better results from their future arrangements of this nature.

JOS. G. TOTTEN,
W. W. SEATON,
H. W. HILLIARD.

TITLE LXXIII.

THE SMITHSONIAN INSTITUTION.

TITLE LXXIII.

THE SMITHSONIAN INSTITUTION.

Sec.	Sec.
5579. Incorporation of the Institution.	5587. Library.
5580. Regents.	5588. Evidence of title to site and buildings.
5581. Appointment of regents.	5589. Protection of property.
5582. Organization of Board.	5590. Appropriation of interest.
5583. Duties of Secretary.	5591. Acceptance of other sums.
5584. Salary and removal of Secretary, &c.	5592. Disposal of unappropriated money.
5585. Special meetings of members.	5593. Disbursements.
5586. Reception and arrangement of specimens and objects of art.	5594. Right of repeal.

PREAMBLE. James Smithson, esquire, of London, ^{Will of James Smithson.} in the kingdom of Great Britain, having by his last will and testament given the whole of his property to the United States of America, to found, at Washington, under the name of the "Smithsonian Institution," an establishment for the increase and diffusion of knowledge among men; and the United States having, by an act of Congress, received said property and accepted said trust; therefore, for the faithful execution of said trust, according to the will of the liberal and enlightened donor,

SEC. 5579. The President, the Vice-President, ^{Incorporation of the institution.} the Secretary of State, the Secretary of the Treas-

¹ Aug., 1846, c. 78, s. 1, v. 9, p. 12.
²⁰ March, 1871, c. 1, v. 17, p. 1.

ury, the Secretary of War, the Secretary of the Navy, the Postmaster General, the Attorney General, the Chief Justice, the Commissioner of the Patent Office, and the Governor of the District of Columbia, and such other persons as they may elect honorary members, are hereby constituted an establishment, by the name of the "Smithsonian Institution," for the increase and diffusion of knowledge among men; and by that name shall be known and have perpetual succession, with the powers, limitations, and restrictions hereinafter contained, and no other.

Regents.

¹⁰ Aug., 1846, c. 78, s. 3, v. 9, p. 103.
¹⁰ Jan., 1867, c. 11, v. 13, p. 420.
²⁰ March, 1871, c. 1, v. 17, p. 1.

SEC. 5580. The business of the Institution shall be conducted at the city of Washington by a Board of Regents, named the Regents of the Smithsonian Institution, to be composed of the Vice-President, the Chief Justice of the United States, and the Governor of the District of Columbia; three members of the Senate and three members of the House of Representatives; together with six other persons, other than members of Congress, two of whom shall be resident in the city of Washington; and the other four shall be inhabitants of some State, but no two of them of the same State.

Appointment of regents.

¹⁰ Aug., 1846, c. 78, s. 3, v. 9, p. 103.

SEC. 5581. The Regents to be selected shall be appointed as follows: The members of the Senate by the President thereof; the members of the House by the Speaker thereof; and the six other persons by joint resolution of the Senate and House of Representatives. The members of the

House so appointed shall serve for the term of two years; and on every alternate fourth Wednesday of December a like number shall be appointed in the same manner, to serve until the fourth Wednesday in December, in the second year succeeding their appointment. The Senators so appointed shall serve during the term for which they shall hold, without re-election, their office as Senators. Vacancies, occasioned by death, resignation, or otherwise, shall be filled as vacancies in committees are filled. The regular term of service for the other six members shall be six years; and new elections thereof shall be made by joint resolution of Congress. Vacancies occasioned by death, resignation, or otherwise may be filled in like manner by joint resolution of Congress.

SEC. 5582. The Regents shall meet in the city of Washington and elect one of their number as Chancellor, who shall be the presiding officer of the Board of Regents, and called the Chancellor of the Smithsonian Institution, and a suitable person as Secretary of the Institution, who shall also be the Secretary of the Board of Regents. The Board shall also elect three of their own body as an executive committee, and the Regents shall fix on the time for the regular meetings of the Board; and, on application of any three of the Regents to the Secretary of the Institution, it shall be his duty to appoint a special meeting of the Board of Regents, of which he shall give

Organization of
board.

Ibid.

notice, by letter, to each of the members; and, at any meeting of the Board, five shall constitute a quorum to do business. Each member of the Board shall be paid his necessary traveling and other actual expenses, in attending meetings of the Board, which shall be audited by the executive committee, and recorded by the Secretary of the Board; but his service as Regent shall be gratuitous.

Duties of Secretary.

Ibid., s. 7, p. 105.

SEC. 5583. The Secretary of the Board of Regents shall take charge of the building and property of the Institution, and shall, under their direction, make a fair and accurate record of all their proceedings, to be preserved in the Institution; and shall also discharge the duties of librarian and of keeper of the museum, and may, with the consent of the Board of Regents, employ assistants.

Salary and removal of Secretary, &c.

Ibid.

SEC. 5584. The Secretary and his assistants shall respectively receive for their services such sums as may be allowed by the Board of Regents, to be paid semi-annually on the first day of January and July; and shall be removable by the Board of Regents whenever, in their judgment, the interests of the Institution require such removal.

Special meetings of members.

Ibid., s. 8.

SEC. 5585. The members and honorary members of the Institution may hold stated and special meetings, for the supervision of the affairs of the Institution and the advice and instruction of the Board of Regents, to be called in the manner

provided for in the by-laws of the Institution, at which the President, and in his absence the Vice-President shall preside.

SEC. 5586. Whenever suitable arrangements can be made from time to time, for their reception, all objects of art and of foreign and curious research, and all objects of natural history, plants, and geological and mineralogical specimens, belonging to the United States, which may be in the city of Washington, in whosoever custody they may be, shall be delivered to such persons as may be authorized by the Board of Regents to receive them, and shall be so arranged and classified in the building erected for the Institution as best to facilitate the examination and study of them; and whenever new specimens in natural history, geology, or mineralogy, are obtained for the museum of the Institution, by exchanges of duplicate specimens which the Regents may in their discretion make, or by donation, which they may receive, or otherwise, the Regents shall cause such new specimens to be appropriately classed and arranged. The minerals, books, manuscripts, and other property of James Smithson, which have been received by the Government of the United States, shall be preserved separate and apart from other property of the Institution.

Reception and
arrangement of
specimens and
objects of art.

Ibid., s. 6.

SEC. 5587. The Regents shall make, from the interest of the fund, an appropriation, not exceeding an average of twenty-five thousand

Library.

Ibid., s. 8.

dollars annually, for the gradual formation of a library composed of valuable works pertaining to all departments of human knowledge. [See § 94, 99, 100.]

Evidence of
title to site and
buildings.

Ibid., s. 4, p.
104.

SEC. 5588. The site and lands selected for buildings for the Smithsonian Institution shall be deemed appropriated to the Institution, and the record of the description of such site and lands, or a copy thereof, certified by the Chancellor and Secretary of the Board of Regents, shall be received as evidence in all courts of the extent and boundaries of the lands appropriated to the Institution.

Protection of
property.

Ibid., s. 5.

SEC. 5589. All laws for the protection of public property in the city of Washington shall apply to, and be in force for, the protection of the lands, buildings, and other property of the Smithsonian Institution. All money recovered by or accruing to, the Institution, shall be paid into the Treasury of the United States, to the credit of the Smithsonian bequest, and separately accounted for.

Appropriation
of interest.

Ibid., s. 2, p.
102.

5 Feb., 1867, c.
34, s. 2, v. 14, p.
191.

SEC. 5590. So much of the property of James Smithson as has been received in money, and paid into the Treasury of the United States, being the sum of five hundred and forty-one thousand three hundred and seventy-nine dollars and sixty-three cents, shall be lent to the United States Treasury, at six per centum per annum interest, and six per centum interest on the trust fund and residuary legacy received into the

United States Treasury, payable in half-yearly payments, on the first of January and July in each year, is hereby appropriated for the perpetual maintenance and support of the Smithsonian Institution; and all expenditures and appropriations to be made, from time to time, to the purposes of the Institution shall be exclusively from the accruing interest, and not from the principal of the fund. All the moneys and stocks which have been, or may hereafter be, received into the Treasury of the United States, on account of the fund bequeathed by James Smithson, are hereby pledged to refund to the Treasury of the United States the sums hereby appropriated.

SEC. 5591. The Secretary of the Treasury is authorized and directed to receive into the Treasury, on the same terms as the original bequest of James Smithson, such sums as the Regents may, from time to time, see fit to deposit, not exceeding, with the original bequest, the sum of one million dollars.

SEC. 5592. The Regents are authorized to make such disposal of any other moneys which have accrued, or shall hereafter accrue, as interest upon the Smithsonian fund, not herein appropriated, or not required for the purposes herein provided, as they shall deem best suited for the promotion of the purpose of the testator.

SEC. 5593. Whenever money is required for the payment of the debts or performance of the

Acceptance of other sums.

5 Feb., 1807, c. 34, s. 1, v. 14, p. 391.

Disposal of unappropriated money.

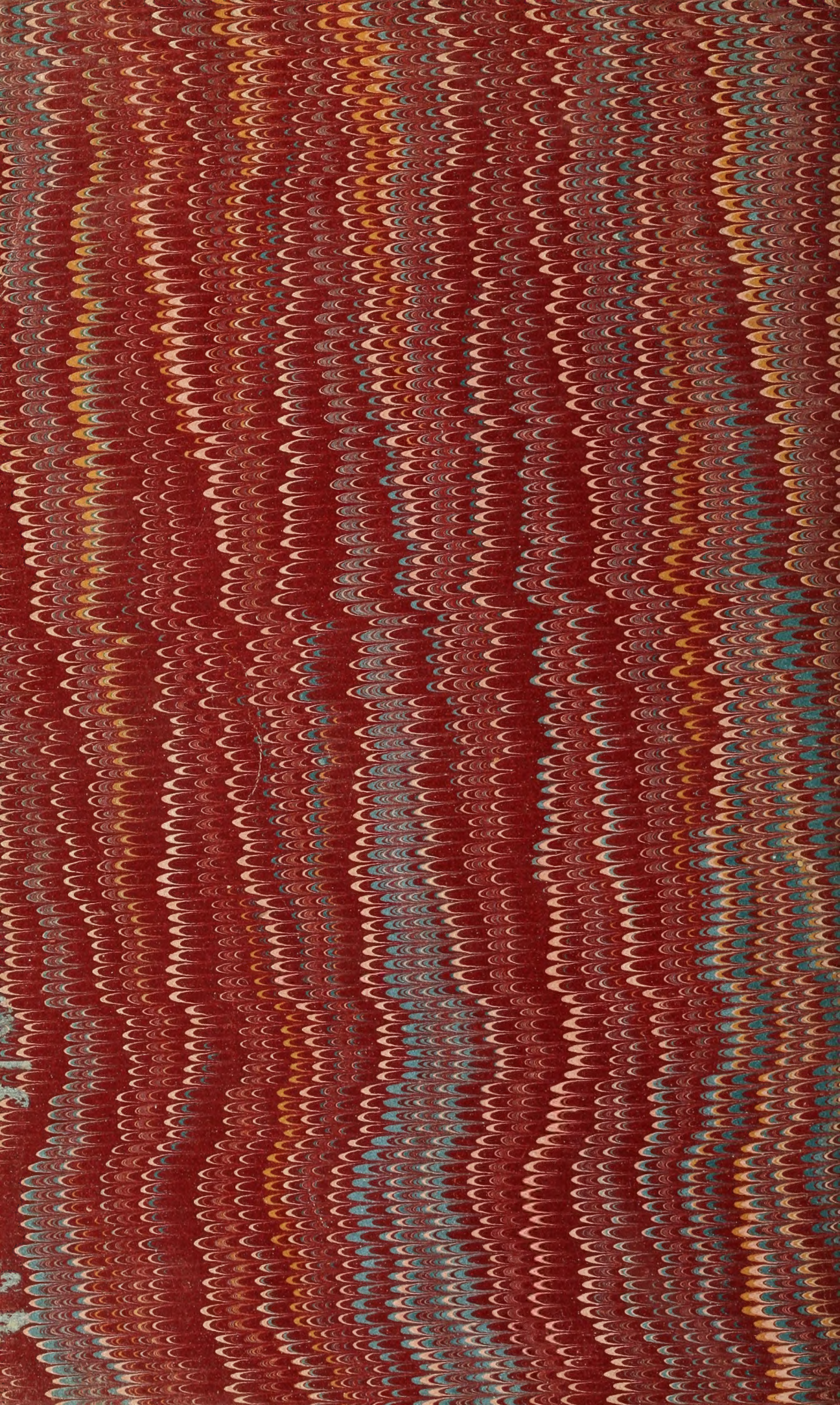
10 Aug., 1846, c. 178, s. 9, v. 9, p. 105.

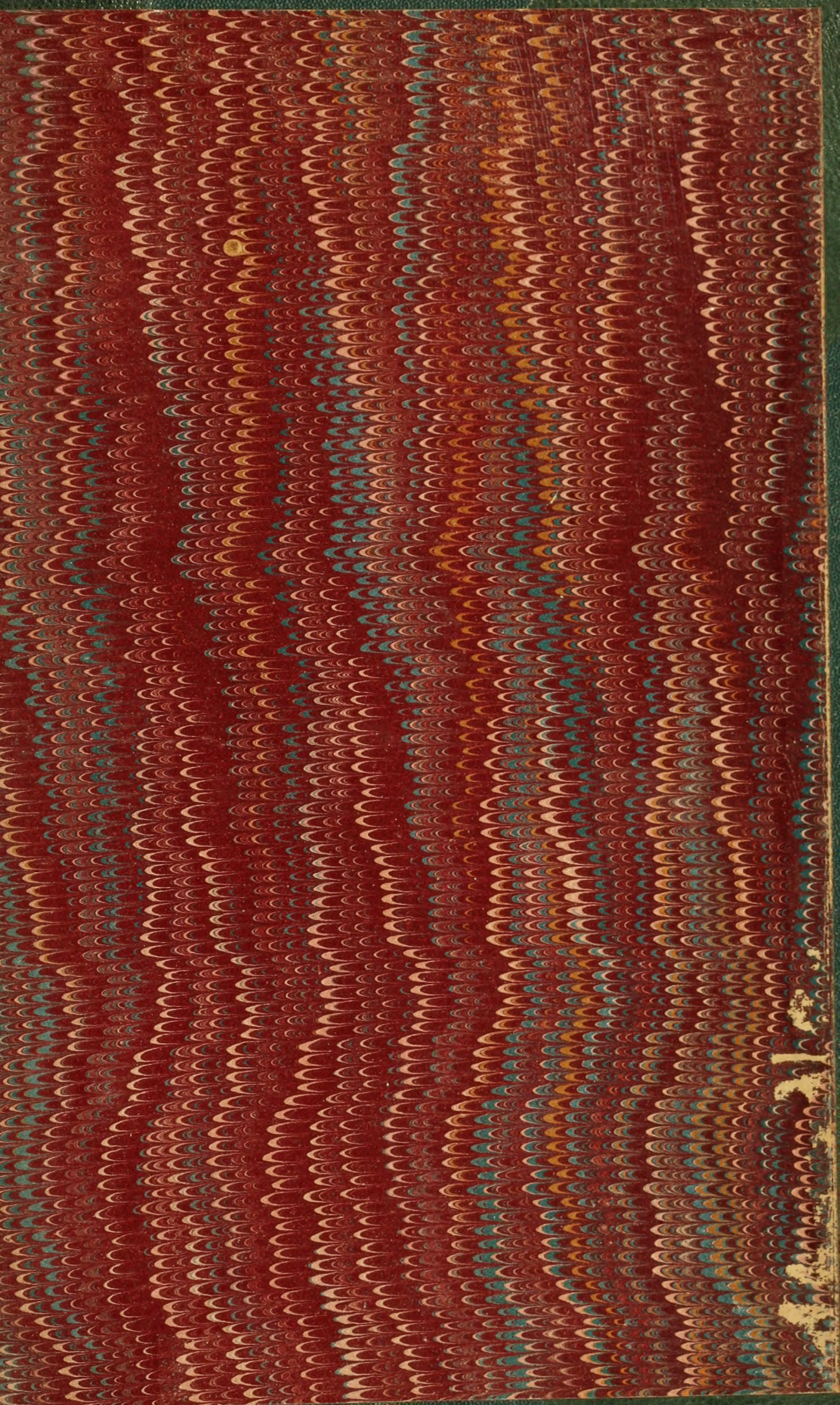
Disbursements.

Ibid., s. 3, p. 103.

contracts of the Institution, incurred or entered into in conformity with the provisions of this Title, or for making the purchases and executing the objects authorized by this Title, the Board of Regents, or the executive committee thereof, may certify to the Chancellor and Secretary of the Board that such sum of money is required, whereupon they shall examine the same, and, if they shall approve thereof, shall certify the same to the proper officer of the Treasury for payment. The Board shall submit to Congress, at each session thereof, a report of the operations, expenditures, and condition of the Institution.

Right of repeal. SEC. 5594. Congress may alter, amend, add
Ibid., s. 11, p. 106. to, or repeal any of the provisions of this Title; but no contract or individual right made or acquired under such provisions shall be thereby divested or impaired.





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